



Agenda

April 2, 2024, 11 a.m.
Regular Meeting

Council Chamber
1200 Carlsbad Village Drive
Carlsbad, CA 92008

Welcome to the Beach Preservation Commission Meeting

We welcome your interest and involvement in the city's legislative process. This agenda includes information about topics coming before the Beach Preservation Commission and the action recommended by city staff. You can read about each topic in the staff reports, which are available on the city website.

How to watch

In Person



City Council Chamber
1200 Carlsbad Village Drive

Online



Watch the livestream at
carlsbadca.gov/watch

How to participate

If you would like to provide comments to the Beach Preservation Commission, please:

- Fill out a speaker request form, located in the foyer.
- Submit the form to the Clerk before the item begins.
- When it's your turn, the Clerk will call your name and invite you to the podium.
- Speakers have three minutes, unless the presiding officer (usually the chair) changes that time.
- You may not give your time to another person, but groups can select a single speaker as long as three other members of your group are present. Group representatives have 10 minutes unless that time is changed by the presiding officer or the commission.
- **In writing:** Email comments to parksandrec@carlsbadca.gov. Comments received by 10 a.m. the day of the meeting will be shared with the Commission prior to the meeting. When e-mailing comments, please identify in the subject line the agenda item to which your comments relate. All comments received will be included as part of the official record.
Written comments will not be read out loud.

Reasonable accommodations

Reasonable Accommodations Persons with a disability may request an agenda packet in appropriate alternative formats as required by the Americans with Disabilities Act of 1990. Reasonable accommodations and auxiliary aids will be provided to effectively allow participation in the meeting. Please contact the City Manager's Office at 442-339-2821 (voice), 711 (free relay service for TTY users), 760-720-9461 (fax) or manager@carlsbadca.gov by noon on the Monday of the meeting to make arrangements. City staff will respond to requests by 4 p.m. on Monday, the day before the meeting, and will seek to resolve requests before the start of the meeting in order to maximize accessibility.

CALL TO ORDER:

ROLL CALL:

PLEDGE OF ALLEGIANCE:

APPROVAL OF MINUTES:

Minutes of the Regular Meeting held on Dec. 5, 2023

PRESENTATIONS: None.

CONSENT CALENDAR: None.

The items listed under Consent Calendar are considered routine and will be enacted by one motion as listed below. There will be no separate discussion on these items prior to the time the Commission votes on the motion unless members of the Commission or the public request specific items be discussed and/or removed from the Consent Calendar for separate action.

PUBLIC COMMENT: *The Brown Act allows any member of the public to comment on items not on the agenda. Please treat others with courtesy, civility, and respect. In conformance with the Brown Act, public comment is provided so members of the public may participate in the meeting by submitting comments as provided on the front page of this agenda. The Beach Preservation Commission will receive comments at the beginning of the meeting. In conformance with the Brown Act, no action can occur on these items.*

PUBLIC HEARINGS: None.

DEPARTMENTAL REPORTS:

1. **UPDATE ON CITY OF OCEANSIDE BEACH REPLENISHMENT AND RETENTION PROJECT PRESENTATION** - Receive an informational report from Jayme Timberlake, Oceanside's Coastal Zone Administrator, on Oceanside's Beach Sand Nourishment and Retention Project, including a summary of the concluded RE:BEACH Oceanside Coastal Resilience Design Competition. (Staff Contact: Nick Stupin, Parks & Recreation Department)

Recommendation: Receive the informational report.

2. **BATIQUITOS LAGOON FOUNDATION ACTIVITIES** - Receive an informational report on the activities of the Batiquitos Lagoon Foundation. (Staff Contact: Nick Stupin, Parks & Recreation Department)

Recommendation: Receive the informational report.

3. **ADAPTIVE MANAGEMENT PLAN FOR THE SOUTH CARLSBAD BOULEVARD CLIMATE ADAPTATION PROJECT** - Receive a report on how a 1-mile segment of south Carlsbad Boulevard could be managed to protect people, the environment and infrastructure from the effects of anticipated sea level rise. (Staff Contact: Tom Frank, Transportation Department and Katie Hentrich, Environmental Sustainability Department)

Recommendation: Receive the updated informational presentation.

4. TRI-ANNUAL REPORT OUT ON WORK PLAN FOR 2024 - Review of the Commission's Work Plan for 2024 and a report out on made towards completing the goals and tasks. (Staff Contact: Nick Stupin, Parks & Recreation Department)

Recommendation: Review the work plan and report out on its goals and tasks.

COMMISSION COMMENTARY AND REQUESTS FOR CONSIDERATION OF MATTERS: *This portion of the agenda is for the Commission to make brief announcements, brief reports of their activities and requests for future agenda items.*

DIRECTOR'S COMMENTS:

ANNOUNCEMENTS:

ADJOURNMENT:



Minutes

Dec. 5, 2023, 11 a.m.
Regular Meeting

Council Chamber
1200 Carlsbad Village Drive
Carlsbad, CA 92008

CALL TO ORDER: 11:01 a.m.

ROLL CALL: Chair Steindlberger, Commissioners Stark, Corrigan, and Norall.
Absent: Vice Chair Colby and Commissioner Woolsey.

PLEDGE OF ALLEGIANCE: Chair Steindlberger led the Pledge of Allegiance.

APPROVAL OF MINUTES:

Minutes of the Regular Meeting held on Oct. 3, 2023

Motion by Commissioner Stark, second by Commissioner Corrigan to approve the Minutes of the Regular Meeting held on Oct. 3, 2023, as presented. Motion carried, 3/0/1/2 (Norall – Abstain; Colby, Woolsey – Absent).

PRESENTATIONS: None.

CONSENT CALENDAR: None.

PUBLIC COMMENT: Former Chair Fred Briggs gave a report on the Carlsbad Tomorrow Growth Management Citizens Committee.

PUBLIC HEARINGS: None.

DEPARTMENTAL REPORTS:

1. **CITY OF CARLSBAD BEACH PROFILE SURVEY RESULTS** – Receive an informational report on the beach profile surveys up to date, natural impacts, and results of past replenishment projects. activities of the Agua Hedionda Lagoon Foundation. (Staff Contact: Michael Tully, Parks & Recreation Department, Nick Stupin, Parks & Recreation Department)

Recommended Action: Receive the presentation.

Principal of Coastal Frontiers Greg Hearon presented a PowerPoint presentation on the state of beaches within Carlsbad, based off the beach profile survey studies to date. The report included background information, monitoring program specifics, and survey results/findings. (on file in the Office of the City Clerk).

Commission received the presentation.

2. **TRI-ANNUAL REPORT OUT ON WORK PLAN FOR FISCAL YEAR 2022-23** – Review the Commission's Work Plan for Fiscal Year 2022-23 and a report out on progress made towards completing the goals and tasks. (Staff Contact: Michael Tully, Parks & Recreation Department, Nick Stupin, Parks &

Recreation Department)

Recommendation: Receive the informational report.

Park Planner Michael Tully and Park Planning Manager Nick Stupin presented a PowerPoint presentation (on file in the Office of the City Clerk) of the work plan for 2022-2023 for review and solicited any comments or edits from commissioners. There was also an update about the beach clean-up event that occurred on Nov. 4, 2023 at the city controlled north beach within the Tri-Annual Report Out. In addition, Nick Stupin informed the commission that the Planning Department is still in the process with the Local Coastal Plan and will bring back to the commission when the document is ready.

Commission received the presentation and reviewed the work plan.

Commissioner Stark requested an update from the Buena Vista Lagoon Foundation.

Commissioner Noral requested an update from the California State Parks Office, and to provide notice of upcoming SANDAG meetings.

3. APPROVAL OF COMMISSION WORK PLAN FOR 2024 – Review, edit as needed, and accept the Beach Preservation Commission Work Plan for 2024. (Staff Contact: Michael Tully, Parks & Recreation Department, Nick Stupin, Parks & Recreation Department)

Recommended Action: Receive the presentation.

Park Planner Michael Tully and Park Planning Manager Nick Stupin presented a PowerPoint presentation (on file in the Office of the City Clerk) of the Beach Preservation Commission work plan for 2024 for review and solicited any comments or edits from commissioners.

Commission received the presentation and reviewed the work plan.

Park Planner Michael Tully and Park Planning Manager Nick Stupin mentioned edits to the commission composition of the Carlsbad Municipal Code.

Chair Steindlberger requested future BPC work plans be converted into a matrix format.

Commissioner Corrigan and Chair Steindlberger requested for future reference, the BPC work plan be presented in the October meeting to be allowed more time for edits and comments.

Motion by Chair Steindlberger, a second by Commissioner Norall, to approve the amended work plan. Motion carried, 4/0/0/2 (Colby, Woolsey – Absent).

COMMISSION COMMENTARY AND REQUESTS FOR CONSIDERATION OF MATTERS: *This portion of the agenda is for the Commission to make brief announcements, brief reports of their activities and requests for future agenda items.*

Chair Steindlberger would like to invite the Transportation Department staff to an upcoming Beach

Chair Steindlberger would like to an update on the City of Oceanside RE:Beach project.

DIRECTOR'S COMMENTS:

Parks & Recreation Director Kyle Lancaster mentioned Commissioner Shotas resigned due to employment conflicts.

ANNOUNCEMENTS: None.

ADJOURNMENT: 12:24 p.m.

Adriana Alvarez
Senior Office Specialist



BEACH PRESERVATION COMMISSION

Staff Report

Meeting Date: April 2, 2024

To: Beach Preservation Commission

From: Kyle Lancaster, Parks & Recreation Director

Staff Contact: Nick Stupin, Parks Planning Manager
nick.stupin@carlsbadca.gov, 442-339-2527

Subject: Oceanside's Beach Sand Nourishment and Retention Project Update

Recommended Action

Receive an informational report from Jayme Timberlake, Oceanside's Coastal Zone Administrator, on Oceanside's Beach Sand Nourishment and Retention Project, including a summary of the concluded RE:BEACH Oceanside Coastal Resilience Design Competition.

Discussion

On Oct. 3, 2023, the Beach Preservation Commission received an informational report from Ms. Timberlake on phase two of Oceanside's Sand Nourishment and Retention Project, including the commencement of the RE:BEACH Oceanside Coastal Resilience Design Competition.

On Feb. 2, 2024, the Commission received a Carlsbad City Council Memorandum which provided an update on Oceanside's Beach Sand Nourishment and Retention Project (Exhibit 1).

On March 28, 2024, staff received a summary from Ms. Timberlake, which provided another update on Oceanside's Beach Nourishment and Retention Project (Exhibit 2).

Next Steps

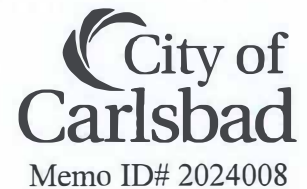
Staff will stay in communication with Ms. Timberlake regarding significant developments on this project and will convey those developments to the Commission as needed.

Exhibits

1. Carlsbad City Council Memorandum, dated Feb. 2, 2024
2. RE:BEACH Oceanside, Winning Design Concept Memorandum, dated March 28, 2024

To the members of the:
CITY COUNCIL
Date 2/2/24 CA CC
CM ACM DCM (3)

Exhibit 1



Council Memorandum

February 2, 2024

To: Honorable Mayor Blackburn and Members of the City Council
From: Gary Barberio, Deputy City Manager, Community Services
Kyle Lancaster, Parks & Recreation Director
Via: Geoff Patnoe, Assistant City Manager
Re: **Oceanside's Beach Sand Nourishment and Retention Project Update (District 1)**

This memorandum provides an update to a previous City Council Memorandum, dated September 7, 2023, on the City of Oceanside's Beach Sand Nourishment and Retention Project.

Background

July 26, 2023 – Oceanside staff sent Carlsbad staff a brief "...summary of the current happenings with the Phase 2 Sand Nourishment and Retention Pilot Project" and advised that "Our design competition, which supports the Phase 2 Project, is now called RE:BEACH Oceanside, and it is underway, but only recently launched..."

August 23, 2023 – Oceanside staff sent Carlsbad staff an invitation to attend the first public workshop for the RE:BEACH design competition on August 29, 2023, and indicated there would be a total of three public workshops held prior to a City Council decision in January 2024.

August 29, 2023 – Oceanside staff held the first public workshop for the RE:BEACH design competition. Carlsbad staff attended the workshop. Three design teams were invited to present at the workshop: Dutch based firm Delatarus, New York and San Francisco based firm SCAPE and Australia based firm ICM. Each team gave a presentation that included an overview of Oceanside's beach conditions, challenges retaining sand south of the pier, past replenishment efforts and results, proposed design strategies, design concepts, results achieved elsewhere using similar strategies, and results anticipated in Oceanside. All firms presented varying strategies that could be implemented at multiple Oceanside beach locations as pilot projects to be monitored for results, which could lead to a more comprehensive approach.

August 31, 2023 – The Carlsbad City Council received an email from the Carlsbad City Manager that included a link to a video of the workshop, and a link to Oceanside's RE:BEACH webpage. He also indicated the concepts shared by each team represented high level proposals that will continue to be refined in the months ahead based on feedback from the public and in collaboration with the jury.

Community Services Branch
Parks & Recreation Department
799 Pine Avenue | Carlsbad, CA 92008 | 442-339-2826 t

Council Memo – Oceanside’s Beach Sand Nourishment and Retention Project Update (District 1)
February 2, 2024

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September 6, 2023 – Carlsbad staff held a meeting with Oceanside staff to further discuss the presentations at the public workshop and confirm remaining actions in the evaluation process.

Discussion

October 3, 2023 – The Carlsbad Beach Preservation Commission received a presentation from Oceanside staff on Phase II of the City of Oceanside’s Sand Nourishment and Retention Pilot Project, including its RE:BEACH Oceanside Coastal Resilience Design Competition (Attachment A).

October 17, 2023 - Oceanside staff held the second public workshop for the RE:BEACH design competition. Carlsbad staff attended the workshop. The same three design teams were invited to host open house style booths to describe the refinements to their design concepts and respond to questions from participants.

November 2, 2023 - Carlsbad staff held a meeting with Oceanside staff to further discuss the presentations at the public workshop and confirm remaining actions in the evaluation process.

December 13, 2023 - Oceanside staff held the third public workshop for the RE:BEACH design competition. Carlsbad staff attended the workshop. The same three design teams were invited to make presentations on their final design concepts, explain why their firm should be selected for the pilot project, and respond to questions from participants.

December 14, 2023 - Carlsbad staff called Oceanside staff to further discuss the presentations at the public workshop and confirm remaining actions in the evaluation process.

January 4, 2024 - The City of Oceanside posted a news release on its website, titled RE:BEACH Jury Recommends Winning Design Team. The news release read in part:

The Jury/Advisory Panel had an opportunity to meet one-on-one with each Design Team to further discuss the technical, societal, environmental, and financial components of each proposal. Following these discussions, the RE:BEACH Jury expressed their unanimous support of a preferred alternative, International Coastal Management’s “Living Speed Bumps” concept. The “Living Speed Bumps” concept includes the construction of two small headlands that will aim to stabilize sand on the back beach, with an offshore artificial reef aimed at slowing down nearshore erosive forces. ICM, based in Australia’s Gold Coast, has decades of experience implementing “speed bumps” on their own coastline, bringing forward a new concept for Oceanside’s coast, but with a proven track record of success on the East Coast of Australia.

The Jury’s selection of this option was based on the proposal’s ability to meet the RE:BEACH project goals and design criteria. According to the Jury, ICM’s concept clearly demonstrates potential positive impact in retaining sand, while leveraging existing infrastructure to further extend the effectiveness of sand placement.

Based on the Jury/Advisory Panel deliberations and public feedback, two key modifications to the design will be promoted: (1) refinement of the top of the headland space to use more

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environmentally or aesthetically pleasing elements that blend with Oceanside’s character, and (2) utilization of rock instead of geotextile bags for construction of the artificial nearshore reef.

While the Jury/Advisory Panel deliberations offered important feedback and a clear recommended winning concept, the Oceanside City Council will ultimately provide the final approval and guidance on a recommended design.

Through the RE:BEACH process, teams collected hundreds of comments, in person and online, from the numerous residents and community groups who showed up by the hundreds to the Public Workshop series. Working with local community organizations like Save Oceanside Sand, Surfrider Foundation, the Oceanside Chamber of Commerce, and others, the Design Teams each engaged in robust community conversations on the long-standing issue of beach erosion in Oceanside.

January 23, 2024 – Oceanside staff held a hybrid (in-person/virtual) meeting with representatives of San Diego County coastal cities on the RE:BEACH Oceanside design competition. Carlsbad staff attended the meeting, along with Oceanside Mayor Esther Sanchez, Solana Beach Mayor Leesa Heebner, Encinitas Mayor Tony Kranz, Encinitas Council Member Joy Lyndes and Del Mar Council Member Dwight Worden. The presentation included an overview and timeline of the competition, the design concepts considered, the criterion weighed, and the design concept preferred by the jury/advisory panel (Attachment B). Oceanside’s staff and Mayor expressed the intent of its Sand Nourishment and Retention Pilot Project providing benefit to not the City of Oceanside, but also to other coastal cities within the region. Oceanside’s staff and Mayor invited questions from attendees and offered responses.

January 31, 2024 – Oceanside’s City Council held a RE:BEACH Winning Design Workshop. A detailed City Council Staff Report was posted to the City of Oceanside’s website in advance of the workshop. Oceanside’s City Council approved staff’s recommendation, which read:

Staff recommends that the City Council take the following actions for the RE:BEACH Oceanside Coastal Resilience Competition:

- 1. Receive the conceptual alternatives and concur with the following staff recommended options:*
 - a. Approve the staff and jury recommended selection of International Coastal Management as the winning design team, with its Living Speed Bumps concept*
 - b. Approve the staff and jury recommended modifications to the selected design concept*
- 2. Authorize staff to proceed with final design, engineering and environmental compliance tasks of the Phase 2 Sand Nourishment and Retention Pilot Project*

Sand replenishment projects that could benefit beaches within Carlsbad

The city has received a number of public inquiries about sand replenishment in Carlsbad, particularly in the southern Ponto-area reaches of the coastline. When the city receives inquiries about sand replenishment and projects that could benefit Carlsbad, staff will respond to residents as follows:

The majority of the beaches within Carlsbad are owned and controlled by the State of California. The City of Carlsbad controls only the northern most mile of beach (from Oak Avenue to the Oceanside Border via a lateral public access easement). The city does, however, support several sand replenishment projects that benefit beaches within Carlsbad, including the Oceanside Harbor Maintenance Dredging Project, the Agua Hedionda Lagoon Maintenance Dredging Project, the Batiquitos Lagoon Maintenance Dredging Project, and the SANDAG Regional Beach Sand Project III. Each of these projects involve other entities, with whom Carlsbad staff have developed points of contact. For more information on these projects and their respective cycles, contact Parks Planning Manager Nick Stupin at nick.stupin@carlsbadca.gov, or 442-339-2527.

For additional reference, Carlsbad staff have also compiled an ownership map of the beaches/shorelines within Carlsbad (Attachment D), and an updated synopsis of each of the above noted sand replenishment projects (Attachment E), and their next anticipated cycles.

Next Steps

Staff will continue to stay in communication with Oceanside staff regarding significant developments on Phase II of Oceanside’s Beach Sand Replenishment and Retention Project, as well as the other entities’ points of contact regarding significant developments on their respective projects.

- Attachment:
- A. Carlsbad Beach Preservation Commission Staff Report, dated October 3, 2023
(Due to the size of Attachment A, a hardcopy is on file in the Office of the City Council, as reference)
 - B. Oceanside Meeting of San Diego Co. coastal cities slides, dated January 23, 2024
 - C. Oceanside City Council Workshop Staff Report, dated January 31, 2024
(Due to the size of Attachment C, a hardcopy is on file in the Office of the City Council, as reference)
 - D. Map of the ownership of the beaches/shorelines within Carlsbad
 - E. Synopsis of sand replenishment projects that benefit beaches within Carlsbad

cc: Scott Chadwick, City Manager
Cindie McMahon, City Attorney
Paz Gomez, Deputy City Manager, Public Works
James Wood, Environmental Sustainability Director
Jeff Murphy, Community Services Director
Kristina Ray, Communications & Engagement Director

Council Memo – Oceanside’s Beach Sand Nourishment and Retention Project Update (District 1)

February 2, 2024

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Allegra Frost, Deputy City Attorney
Todd Reese, Parks Services Manager
Nick Stupin, Parks Planning Manager
Beach Preservation Commissioners



BEACH PRESERVATION COMMISSION

Staff Report

Meeting Date: Oct. 3, 2023

To: Beach Preservation Commission

From: Kyle Lancaster, Parks & Recreation Director

Staff Contact: Michael Tully, Parks Planner
michael.tully@carlsbadca.gov, 442-339-5724

Subject: City of Oceanside Phase 2 Sand Nourishment and Retention Pilot Project

Recommended Action

Receive an informational report from a representative of the City of Oceanside on phase two of its Sand Nourishment and Retention Pilot Project, including the RE:BEACH Oceanside Coastal Resilience Design Competition (Exhibit 1).

Discussion

Through phase two of its Sand Nourishment and Retention Pilot Project, the City of Oceanside seeks to develop a program that will determine an offshore source of high-quality sand for nourishment projects along Oceanside's beaches, while simultaneously designing and permitting a sand retention mechanism or structure that will help retain placed sand. The design of the retention structure is being developed through a global design competition led by GHD Inc. and its subconsultant Resilient Cities Catalyst.

In the spring of 2023, the City of Oceanside launched the RE:BEACH design competition. The RE:BEACH project team is composed of City of Oceanside's Coastal Zone Administrator Jayme Timberlake, GHD Senior Coastal Scientists Brian Leslie and Nick Sadrpour, Resilient Cities Catalyst Co-Founder, Sam Carter and Associate Director, Alex Klein. An advisory panel/jury was assembled by the project team to assist the City of Oceanside in selecting a design firm finalist.

The following three design firms were advanced as finalists for the RE:BEACH competition:

- SCAPE Landscape Architecture with ESA and the Dredge Research Collaborative
- Deltares with Deltares USA, and MVRDV
- International Coastal Management

The project team expects the three design teams to explore a variety of design options, including but not limited to dunes, cobble berms, artificial headlands and reefs, as examples of nature-based or nature-inspired coastal features that can work together to create a resilient and sustainable sandy shoreline. All designs will be guided by the design criteria, which sustains

a focused mission to construct an innovative, multi benefit sand retention project on the City of Oceanside's beaches that serves both local and regional benefits.

The design criteria guidelines were provided for the physical, environmental, financial, social and regional components of the project and are included in the Oceanside Design Competition Solicitation Package (Exhibit 1, Attachment A).

Public Workshops:

- The first public workshop was held at the Oceanside Council Chamber on Tuesday, Aug. 29, 2023. The workshop was an initial open house style, followed by formal presentations from the three design teams. Carlsbad staff attended the workshop.
- The second public workshop is scheduled to be held on Oct. 17, 2023
- The third public workshop is scheduled to be held on Dec. 13, 2023

The winning design will be presented to the Oceanside City Council for approval in January 2024. Upon a passing vote, the winning design will move into final engineering and environmental compliance review.

Next Steps

Staff will stay in communication with the City of Oceanside staff regarding significant developments on phase two of the Oceanside Beach Sand Replenishment and Retention Project and convey them as needed.

Exhibits

1. Phase 2 Sand Nourishment and Retention Pilot Project, Oceanside Coastal Zone Management.

Phase 2 Sand Nourishment and Retention Pilot Project

Oceanside Coastal Zone Management

Carlsbad, Beach Preservation Commission meeting – Tuesday, October 3rd, 2023

On January 25, 2023, the Oceanside City Council reviewed and approved a Professional Services Agreement with GHD Inc for Phase 2 of the Sand Nourishment and Retention Pilot Project. Through this Project, Oceanside seeks to develop a program that will determine an offshore source of high-quality (i.e. larger grain size) sand for nourishment projects along Oceanside’s beaches, while simultaneously designing and permitting a sand retention mechanism or structure that will help retain placed sand. The design of the retention structure is being developed through a global design competition that is being led by GHD Inc. and their subconsultant Resilient Cities Catalyst (RCC).

A global call to action was released in February 2023, inviting engineering firms from across the world to apply to participate in RE:BEACH Oceanside, a Coastal Resilience Design Competition. A Jury and Advisory Panel comprised of local, state, and national experts weighed in on reviewing initial proposals from the global teams, with the City and Project Team making the ultimate decision on the finalists, based on experience, proposed approach and track record of delivering innovative solutions. The following three teams were selected to participate in RE:BEACH:

- SCAPE Landscape Architecture with ESA and the Dredge Research Collaborative
SCAPE is a New York City based landscape architecture and urban design firm with offices in New Orleans and San Francisco. The team works to create well-designed, ecologically restorative and socially engaged landscapes through diverse forms of design. Scape Studio aims to use this project to bolster the transformative potential of natural spaces.
- Deltares with Deltares USA, and MVRDV
Deltares is a nonprofit, solution-driven Dutch firm which boasts a robust knowledge of major societal issues and realizes the urgency behind finding equitable, sustainable solutions. Deltares’ mission revolves around working passionately to find answers to some of life’s biggest environmental questions.
- International Coastal Management
An Australia-based firm that aims to meet the objectives of the project, while also acknowledging the unique opportunities and challenges of Oceanside’s coastal environment. From the Gold Coast in Australia to Europe and the Caribbean, the team of coastal engineers has experience with various technical coastal designs, having completed projects for SeaWorld, the Gold Coast Waterways Authority, the Nature Conservancy, etc.

Through this process, the Project Team expects the three Design Teams to explore a variety of design options, including but not limited to dunes, cobble berms, artificial headlands and reefs as examples of nature-based or nature-inspired coastal features that can work together to create a resilient and sustainable sandy shoreline. All designs will be guided by the Design Criteria, which sustains a focused mission to **construct an innovative, multi benefit sand retention project on the City of Oceanside’s beaches that serves both local and regional benefits**. Design Criteria were scrutinized by the Project Team, City Team, Jury and Advisory Panel prior to initiating connections with the global design firms.

The Design Criteria guidelines were provided for the physical, environmental, financial, social and regional components of the Project and are included in the Oceanside Design Competition Solicitation Package (Attachment 1).

The design teams participating in RE:BEACH Oceanside will benefit from the robust information available through Phase 1 Feasibility Study, which included a historic background and data inventory, development and evaluation of alternatives, multi-criteria analysis, and a project monitoring framework.

RE:BEACH Oceanside will take place over 6-months, and will culminate with a recommended winning design, as designated by the Jury/Advisory Panel and Project Team. The winning design will be presented to the Oceanside City Council for approval in January 2024. Upon a passing vote, the winning design will move directly into final engineering and environmental compliance with the GHD Inc team. What sets this process apart from other, more traditional design competition processes, is its direct link to the engineering design and permitting phases for construction. The ultimate outcome of this process will be a shovel ready sand retention pilot project, supported by offshore investigations and sampling of available sand.

To learn more and participate in RE:BEACH, please visit rebeach.org and subscribe to the mailing list to stay engaged with the competition, learn about upcoming events, and provide input and feedback on the design concepts. Our first public workshop was held on August 29th, with over 200 people from the community and region participating in person, by sharing their thoughts and comments on the preliminary design concepts presented by the design teams. Our next public workshop is the second one of three workshops, taking place on October 17th from 4-7p at Oceanside Museum of Art.

Sand Nourishment & Retention Pilot Project

A Coastal Resilience Design Competition

April 26, 2023

**Design Brief & Team
Solicitation Package**

For the last five decades, the City of Oceanside (City) has been studying and discussing alternatives to effectively maintain a sandy shoreline. The beneficial reuse of dredged Harbor sand is used to annually supplement the beach. This effort, however, has proven to be ineffective at combating coastal erosion due to the characteristics of the dredged material, quantity available, and timing of placement, resulting in only northern portions of the City's coastline benefiting from persistent sandy beaches. The long term efficacy and sustainability of these efforts are further called into question by projected impacts by climate change, including sea level rise and storm pattern shifts. Today, there is no dry sand during much of the year in front of much of the City's shoreline, posing increased risk of flooding and damage to businesses and infrastructure, as well as residential communities, which threatens the City's economic lifblood: the City's visitor and tourism sectors attracted by a sandy beach.

Through a design competition process, Phase Two of the Sand Nourishment and Retention Pilot Project invites innovation into the design of a pilot sand retention mechanism that will support a resilient shoreline in the City. The design shall be one that can be scaled up to benefit larger portions of the City's coastal areas and/or other municipalities in the state or region facing similar challenges. The development of designs will be supported by the Project Team over three Design Rounds, which will include initial reviews by the Project Team, Charrettes with the Project Team and additional experts, Regional Briefings, and Public Workshops (see below for more detail). A final review will be made by a Jury, and their recommendation will be provided to the City Council, who will vote on the winning design.

Through this process, the Project Team wants to see teams explore and consider a variety of design options, including but not limited to dunes, cobble berms, artificial headlands and reefs as examples of nature-based or nature-inspired coastal features that can work together to create a resilient and sustainable sandy shoreline. All designs should be guided and respond, at a minimum, to the Design Criteria in the attached Design Brief. The Design Brief provides background surrounding the issues in the City, current coastal management activities, past investigations into project alternatives (including Phase One) and provides details on the Design Criteria for the competition.

Three Design Teams will be selected to participate in a 8-month design competition from June 2023 to January 2024. The design competition process is enhanced by numerous public outreach events and opportunities. Stipends of \$25,000 USD will be provided to each of the three selected teams. The City is actively fundraising to increase stipends for Design Teams, aiming to raise up to \$100,000 USD per team. Once a winning design is selected, GHD will perform a coastal engineering consistency review to ensure that the approach is viable from a technical and environmental standpoint. A final recommended design will be brought to the City Council in January 2024. The selected design will then move into final engineering and environmental compliance phases, which includes seeking required permits for the project. The winning team will be offered a contract of at least \$100,000 USD from GHD, Inc. to continue to participate and work with the team through the next phase of the project.

Resilient Cities Catalyst are inviting a limited number of teams to respond to this invitation based on their past project experience and expertise. Due to the multi-faceted aspects of the Design Competition, Design Teams are encouraged to form collaborative teams with potentially multiple firms that encompass experienced professionals that represent expertise in a range of disciplines. All invited teams are free to partner with each other, and/or identify additional firms outside of this list to complement their qualifications.

Note: GHD will serve as the project manager for the selected pilot project concept and be able to provide extensive local coastal processes knowledge and coastal engineering support to the successful Design Team. Therefore, Design Teams are encouraged to include some coastal engineering expertise with a majority of the team focusing on innovative, multi-faceted design solutions.

Exhibit 1
**Invited
Teams &
Details**

AECOM	Field Operations	Sasaki
Arcadis	Local Office	SCAPE Landscape Architecture
ARUP	Michael Maltzan Architecture	Schmidt Design Group
Balmori	Mithun	Sherwood Design Engineers
BIG-Bjarke Ingels Group	OLIN	Stoss
Biohabitats	ONE Architecture + Urbanism	Studio for Urban Projects
Deltares	(ONE)	SWA Group
DHI	Oru	TetraTech
Gensler	Rana Creek	TLS Landscape Architecture
Guy Nordenson & Assoc.	RIOS	Woods Bagot
International Coastal Management	Safdie Rabines Architects	WXY

Proposal materials for consideration should be emailed to **Resilient Cities Catalyst (oceanside@rcc.city)** by **5PM Wednesday, May 17, 2023**:

We understand portfolios and materials can take on multiple formats, we ask that teams include, at a minimum, the following materials bundled as a single PDF document. The Project Team will evaluate submissions based on the following categories and corresponding weighting (percentages) indicated below:

- **Project Understanding & Expression of Interest, 15%**—(1-2 pgs).
- **Project Approach, 30%**—with direct consideration and alignment with the Design Criteria (3-5 pgs).
- **Team Qualifications, 25%**—team composition, bios and roles, including key team members from multiple partners, when applicable.
- **Portfolio of Relevant Work, 30%**—provide 3-5 examples of relevant work.

Proposal Timeline:

- **Wednesday, April 26, 2023:** Notification of Opportunity
- **Tuesday, May 9, 2023 and Wednesday May 10, 2023:** Optional Virtual Webinars for Potential Respondents (at 12pm ET/9am PT and 3pm ET/12pm PT each day), invitations with video conference links forthcoming.
- **Wednesday, May 17, 2023:** Responses Due by 5PM
- **Wednesday, May 31, 2023:** Finalist Teams Notified

The Project Team anticipates fielding questions from potential participants between April 26 and May 17. Participants should anticipate that the Project Team may reach out for interviews and/or questions during May 17 to May 31, while proposals are in review.

**Design Brief & Team
Solicitation Package
page. 3**



Design Brief

Oceanside Sand Retention Design Competition

The City of Oceanside (City) invites Design Teams to develop a sand retention pilot-project that builds coastal resilience along one of the most beloved and eroded coasts in California. On January 25, 2023, the City decided to move forward with a design competition process to generate innovative, multi-benefit solutions that solve a decades long problem of shoreline erosion. Each Design Team will work closely with a 'City Team' composed of representatives from key City planning and engineering divisions, as well as the 'Project Team,' led by GHD with Resilient Cities Catalyst, that will provide technical and resilience expertise and feedback through the process. A formal 'Jury'—composed of voting and non-voting members from the local, state, and federal agencies—and the local and regional community leaders and experts will also be part of the Design Competition process. Together, these groups provide expertise, guidance, and stewardship meant to validate, inform, and elevate the designs generated.

In responding to this Design Brief, teams are encouraged to partner with practitioners and firms, as needed, to approach the challenge of designing a sand retention pilot project in Oceanside that addresses coastal erosion. The most successful designs will also consider multiple benefits including habitat improvements, recreational and public use amenities, and coastal flood mitigation. When teaming, please consider that a great deal of coastal engineering has been done in Oceanside by multiple parties, and as part of Phase One of this Project. The Phase One feasibility study is included as supplemental material to this Design Brief), and the author of that study and project manager for Phase Two (this Project), GHD Inc., is available as a technical resource to all three finalist teams; to aid in the development of innovative solutions.

The Design Competition will take place over 8-months, planned for June 2023 – January 2024, culminating in the selection of a winning design by the Project Team and recommended by the Jury. The winning design will be presented to Oceanside's City Council for approval. Upon a passing vote, the winning design will move directly into final engineering and environmental compliance phases, with the GHD team. What sets this process apart from other, more traditional design competition processes, is its direct link to the engineering design and permitting phases for construction. The ultimate outcome of this process will be a shovel ready sand retention pilot project.

We are inviting a select list of design firms to respond by submitting a proposal which includes team Qualifications and Conceptual Approach (see below). The City Team, with input from the Project Team and Jury, will select 3-finalist teams to go through the Design Competition. Each finalist team will be provided with a stipend of \$25,000 USD for their work and engagement in the process. The City is actively fundraising to increase stipends for Design Teams to \$100,000 USD. Once selected, the teams will move through three rounds of design and feedback, including technical and resilience reviews, public workshops, design charrettes, and regional stakeholder briefings. The final designs submitted by selected teams will be evaluated based on their technical feasibility, financial viability, and environmental and social impacts (see criteria below). The winning team will be offered a contract (minimum \$100,000) with GHD to participate with and support the final engineering analysis, design, and permitting of the pilot project.

Exhibit 1
Table of Contents

1. Project Background
2. Problem Statement
3. Design Criteria
4. Competition Structure
5. Anticipated Deliverables
6. Design Timeline



Project Background

The City of Oceanside (City) has a long and storied history of coastal erosion. Eighty years ago, the U.S. Army Corps of Engineers (USACE), constructed a Harbor complex that has directly and negatively impacted beaches in the City. The effect was described as an “erosional wave” whose effects were said to move down the Oceanside Littoral Cell, which spans from the Oceanside Harbor to La Jolla submarine canyon to the south.

Over the past 80 years (from the construction of the Harbor to present day), over 21M cubic yards (cy) of sand has been placed on City beaches to offset erosional impacts. Beach nourishment sand came from both the USACE’s annual harbor dredging program (13.5M cy) and one-off, local, or regional nourishment events (7.5M cy). This also includes a limited volume of sand from the USACE’s Experimental Sand Bypass System that was constructed in the 1980s in efforts to restore the natural transport pathway that was broken when the harbor was constructed. This project was unsuccessful due to a myriad of reasons and was decommissioned within a 5-year period.

The most recent, larger scale projects to take place in the City were two Regional Beach Sand Projects (RBSP) carried out in 2001 and 2012. These projects added over 300k cy each of a coarse gradation sand to the City’s sediment starved coastline. Though some short-term benefits were realized, the sand quickly migrated down coast after placement, as there are no rocky reefs or headlands that may encourage natural sand retention within the straight Oceanside coastline. Similarly, in the 2.5 miles south of the pier, there are no artificial mechanisms in place to retain sand. All these previous efforts have fallen short of providing the City with a sustained, dry sand beach for recreational enjoyment, ecological function, and coastal storm damage protection purposes.

The current condition of many City beaches is dismal for beach recreation, with many areas having little to no dry beach during the majority of the tidal cycle. Furthermore, coastal infrastructure is at risk with wave events impacting the shoreline with greater frequency and severity. This has resulted in the need for frequent maintenance and improvements to coastal infrastructure and shoreline protection systems. Projected sea level rise threatens to make these conditions worse. A third Regional Beach Sand Project is now being considered and pursued regionally by the San Diego Association of Governments (SANDAG) Shoreline Preservation Working Group. Additionally, a dormant USACE mitigation study to investigate solutions to Harbor impacts has recently been reinitiated after receiving federal funding and support to move forward. The City is simultaneously updating its General Plan, including the Local Coastal Program, to aid in providing solutions to coastal erosion from the Harbor construction. Despite these other ongoing efforts to study and mitigate the City’s shoreline problems and regional coastal erosion concerns, the City decided to pursue an independent study in 2021 to understand what opportunities might exist to restore sandy beaches in the City. This study was led by GHD and was called the Oceanside Beach Sand Replenishment and Retention Device Project (referred to as ‘Phase One’). The study looked at a multitude of local, regional, and international project examples as the basis for developing five (short-list) alternatives to be analyzed to protect beaches from long-term shoreline erosion in an environmentally sensitive and financially feasible way for the city.

The five alternatives analyzed were:

- **No Project:** No Project assumes continuation of the status quo in which Harbor maintenance dredging is the only program adding sand to the city beaches on a regular basis. The city would continue to participate in regional nourishment efforts similar to the RBSP I and II on an ad-hoc basis.
- **Alternative 1 - Beach Nourishment:** Beach Nourishment assumes a more frequent beach nourishment program is carried out by the city to deliver 300,000 cy of sand once every five years, approximately doubling the frequency of prior RBSP efforts.
- **Alternative 2 - Groins:** Groins assumes construction of four, 600-foot long, rubble mound groins spaced 1,000 feet apart along the Pilot Reach. The proposed groins are shore-perpendicular and would extend seaward from the existing rock revetment with a crest elevation of 10' MLLW. A 300,000-cy initial nourishment was included to pre-fill the groin field with subsequent nourishment volumes reduced by about 50%.
- **Alternative 3 – San Luis Rey Groin Extension:** San Luis Rey Groin Extension assumes construction of a 350-foot extension of the existing groin to capture sand moving northward toward the harbor. The sand trapped in this fileet could possibly be used as a source for downcoast receiver beaches. This alternative includes a beach nourishment component identical to Alternative 2.
- **Alternative 4 – Multi-purpose Artificial Reef:** Multi-purpose Artificial Reefs assumes construction of two 1,000-foot long, rubble mound reefs spaced 1,200 feet apart along the Pilot Reach. Each reef would have emergent and submergent crest sections along their lengths to dissipate wave energy and potentially create a surfable wave on each end of the reef. A 300,000-cy initial nourishment was included to pre-fill the reef salient with subsequent nourishment volumes reduced by about 50%.

Exhibit 1

A multi-criteria analysis (MCA) was performed to compare alternatives based on a wide range of criteria that reflects the diversity of opinions and input received from the outreach activities. Each alternative was evaluated against 11 criteria, organized into three categories of Technical Performance, Financial, and Environmental. The results of the MCA indicated the highest ranked alternative was Groins, followed by Multi-purpose Reefs. These top two alternatives were separated by 8% from one another in total score, which was meaningful when considering the sensitivity of the scoring and weighting system. Beach Nourishment ranked third, about 17% lower than the Groins and 9% lower than Multi-purpose Artificial Reef. The No Project alternative ranked last with very low scores in the Technical Performance and Environmental categories.

The result of a robust alternative feasibility exercise, numerical modeling, lifecycle economic evaluation, and multi-criteria analysis, suggested a pilot-scale Groin concept be advanced for further analysis, additional public/agency outreach and preliminary design to prepare for the environmental review and permitting process. It was recommended that additional analysis of the Groin alternative involve sensitivity analyses on groin length and spacing, the pre-fill volumes, and sand management systems required to mitigate potential impacts.

Following the completion of Phase One, stakeholders, residents, and several cities to the south of Oceanside expressed concern about the potential for a Groin project to cause erosional impacts along down coast beaches. Additionally, there was a desire from the region, stakeholders, and the public to explore more innovative and/or nature-based solutions to the City's sand retention problem. The approach of the Phase Two Design Competition is to leverage technical data and knowledge gained through Phase One, while addressing these local and regional concerns and needs.



Problem Statement

The history of Oceanside's severe coastal erosion is rooted in a local context of significant sediment reductions to its coast—Oceanside's beaches have been disappearing and along some parts of the coast a rock-revetment is all that remains. The City is not unique in this challenge, as urbanized watersheds, dam construction, coastal development/ armoring and harbor developments have created significant disruptions to the flow of sediment to coastlines around the world. These disruptions many times result in the need to actively manage coastal systems to restore broken sediment pathways with frequent beach nourishment and use of structures to slow the loss of sand—such as use of retention systems.

The Design Competition process seeks to inspire solutions to add and retain sand where it is needed most in the City through innovative and creative concepts. The Design Competition process is meant to embrace and address the complexity of erosion in Oceanside, as well as the broader context across the region, with an eye to the broader global challenge of the 21st Century, where sea level rise meets critical infrastructure.

Four Problem Statements have been developed to help establish context around the most pressing City needs and desired outcomes from this Design Competition. Within each problem statement, there is consideration for:

- Decades of historic coastal development that has directly reduced sediment supply thereby increasing the effects of erosion in the City of Oceanside (for example, the Oceanside Harbor, watershed development, creek channelization, back beach stabilization).
- Existing coastal management strategies within the City and the County have yet to result in sufficient stabilization of the beach for both human recreation and sandy beach ecosystems (for example, Regional Beach Sand Project I & II and annual USACE Maintenance Dredging of the Oceanside Harbor).
- Within the State of California, traditional sediment retention structures have been criticized for their potential negative impacts to downdrift and regional jurisdictions, resulting in an inability to test, build, permit, and finance novel pilot or demonstration projects as potential solutions.
- The environmental history of Oceanside and the San Diego region, combined with best available science on sea level rise and future storm impacts, provides high certainty that, without interventions, erosion and loss of beach width is all but inevitable. There is greater and greater need for regional (and statewide) demonstration and pilot project concepts for sediment retention to utilize innovative techniques that provide multiple benefits for coastal communities.

The four Problem Statements are below. Design Teams are invited to address a set of broad problem statements, that when combined with more specific design criteria, enable innovative pilot design solutions.

Problem Statement One:

How might we design a sand retention pilot project that succeeds in the near (3 years) to short term (20-30 years) at retaining sand while simultaneously providing ecological and flood resilience benefits, limiting negative downdrift impacts and impacts to surfing resources, and is removable if necessary?

Problem Statement Two:

How might a sand retention pilot project open pathways for Oceanside to explore longer term coastal adaptation?

Problem Statement Three:

How might we successfully build and monitor a pilot sand retention project that informs future regional coastal adaptation approaches?

Problem Statement Four:

How might a pilot sand retention project be scaled to benefit a greater reach of the City shoreline?



Design Criteria

The design criteria are meant to fulfill two core objectives: (1) provide a boundary of the scope of design for the proposed solution and (2) generate a set of goals that Design Teams, and their solutions can be measured against. To guide the criteria development, the Project is focused on a mission:

To construct an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits.

Any proposed solution should fulfill this mission, requiring all designs to meet the bare minimum objectives:

- Align with the community character and history of place within the City of Oceanside.
- Leverage previous analysis and feasibility studies completed to-date.
- Maintain a forward-thinking design that incorporates adaptive capacity of solutions to future coastal conditions while addressing chronic erosion issues.
- Be technically feasible, financially viable, and environmentally and socially acceptable.

With both the mission and objectives in mind, the design criteria are as follows:

Design Criteria One: Physical

- Designs should be in the coastal zone south of Oceanside Pier, focusing on the City's most highly eroded beaches.
- Designs should accommodate or be adaptive to up to 2-3 ft of sea level rise (that assumes 20-to-30-year design life), with minimal maintenance. The ability to accommodate or have adaptive capacity to greater amounts of sea level rise would be scored favorably.
- Identify a clear pathway for scaling of the pilot if it succeeds in its intention.
- Reference known design parameters from sand retention alternatives studied through the Phase One report .
- Designs should be structured with the ability to perform sand retention and retain structural integrity under impacts from existing and projected future coastal conditions, including:
 1. Extreme waves (100 yr. return interval – from northern and southern hemispheres), tides and winds (see companion documents, including Phase One report).
 2. Extreme temperatures.
 3. Public use, trampling & vandalism.
 4. Performance goals of a particular design should be articulated.
For example:
 - (a) Retain a particular average annual beach width within a particular reach
 - (b) Prevent overtopping beyond the beach at particular thresholds, such as 100-year total water level (TWL) and sea level rise scenario
 5. For any performance goals, teams should define the anticipated time-scale during which the project would be able to perform as designed.
- Designs should include natural and nature-based features, where feasible, which may

include onsite or imported materials, and/ or innovative materials designed for ocean compatibility.

Design Criteria Two: Financial

- Construction estimates for the designs should be presented for initial construction costs, annual operation and maintenance costs, and removal costs. Creative use or reuse of materials is encouraged to lower costs.
- Designs should articulate the maintenance activities and cost for design to maintain key functions such as retaining sand, providing recreational benefits, and/or minimizing impacts to downdrift sand supply.
- Creative solutions to finance the project are encouraged that fully value the proposed project's range of benefits (social, regional, economic, ecological). Especially if construction costs for designs exceed \$50M.

Design Criteria Three: Environmental

- Designs should encourage the rehabilitation of sandy beach habitat.
- Designs should minimize impacts to sandy beach ecosystems and nearshore marine ecology.
- Designs should be sensitive to where and which habitats may be converted as part of the design, what enhancements to ecology may occur, and where restoration of historic ecosystems may occur.
- All design references to ecological benefits should be qualified with detailed information on habitat classifications, quality, change over time, and uncertainties clearly explained.

Design Criteria Four: Social

- A successful sand retention project should increase usable beach space supporting coastal access and multiple opportunities for recreation.
- Designs should prioritize preserving or enhancing surfing resources and minimizing impacts to existing surf resources.
- Designs should seek to increase or maintain the existing aesthetic of the beach.
- Designs prioritize public safety and low-cost recreational user experiences.
- Designs should maximize public benefit.

Design Criteria Five: Regional

- Designs should provide a regional and statewide opportunity to pilot, test, and evaluate novel sand retention solutions.
- Designs should strive to positively impact the region both directly (i.e., by increasing sediment in the littoral cell) and indirectly (i.e., by providing knowledge beneficial to how to best design and implement retention strategies).
- Designs should be particularly sensitive to the potential for sand retention strategies to impact the flow of sediment through littoral systems and be designed to eliminate, minimize, or mitigate potential negative impacts to downdrift sand supply.

Project Assumptions:

- Pilot project designs will represent reasonable proof-of-concept sand retention strategies that can be piloted, scaled up, and/or repeated if appropriate.
- The objective is to create more time and space for the City to develop a comprehensive adaptation strategy for coastal resources.
- Project designs will assume that 300,000 cy of beach nourishment sand will be available initially within the project area and then for every five years for ongoing sediment management within the project area. The design teams can utilize this sand within their designs and propose various sand placement types within their concepts.
- Project designs will communicate uncertainty of their design's success.
- As pilots, project designs should be able to be adapted or removed if the project does not provide its intended multiple benefits over time.
- Project designs should be implementable, and should reflect an understanding of an ultimate need to be permitted and reviewed based on their adherence to existing laws, including the California Coastal Act. Throughout the competition, teams will be given guidance from experts to help ensure this outcome.



Competition Structure

Three selected Design Teams will participate in a Design Competition. Design Teams will develop innovative sand retention solutions using the Design Brief and Design Criteria as core guidance. The development of designs will be supported by the Project Team over three Design Rounds, which will include Internal Reviews by the Project Team, Charrettes, Regional Briefings, and Public Workshops (see below for more detail). A final review after the third round will be made by a Jury, and their recommendation will be provided to the City of Oceanside's City Council, who will vote on the winning design.

Design Rounds

Each of three Design Rounds will take place over an eight week period. The first four weeks of each round will be largely driven by Design Teams working independently, although the Project Team will be available to respond to clarifying questions or requests for more information at any time. At the end of each four weeks, the Project Team will provide an Internal Review, which will be followed by Charrettes in week five or six, and Public Workshops and Regional Briefings in week 8.

Internal Review

To provide initial guidance and feedback to Design Teams, the Project Team will review submitted materials halfway through each Design Round, and will provide feedback through a video conference within five working days of receiving materials.

Charrettes

Design Teams will be required to participate in a Charette in the fifth or sixth week of each of the three Design Rounds where the Project Team, and other project advisors will provide feedback and comments on progress made on pilot project concepts. These will be hybrid events, although in-person participation is encouraged if possible in Oceanside.

Charrette One

- Setting the stage, getting input from the City Team and the Project Team.
- Presentations from local groups on the Oceanside community, coastal resources, and coastal vision for Oceanside and the greater North County San Diego Region.
- Opportunities to tour the coast. The Project Team will provide general information for teams to take self-guided tours.

Charrette Two

- Design Teams will share preliminary concepts and approaches.
- Project Team and advisors will provide feedback on preliminary design concepts.
- Opportunity for Design Teams to ask questions and gain insight on how to improve designs.

Charrette Three

- Design Teams have developed refined approaches and concepts.
- Opportunity to gather insight on fine tuning designs.

Public Workshops

The Project Team will host a Public Workshop after each Charette to share the progress on developing the pilot-project design concepts. The public will have the opportunity at each workshop to see the evolution of the design process as details and provide comment and input to assist in refining the approaches. Each Design Team will be required to provide the Project Team with figures, graphics, maps, and resources as required that can be used during the Public Workshops. Material requirements will be specified well in advance of each workshop

Public Workshop One - Exploration of Approach

The first public workshop will aim to gather broad input on the teams' initial design approaches. Design Teams will work to gain perspective on community stakeholders' goals and desires for the coast, and collect directional feedback to inform the designs going forward.

Public Workshop Two - Refining the Design

The second public workshop will present more developed designs, with specific components and elements visualized with opportunities for feedback.

Public Workshop Three- Final Designs and Feedback

The third public workshop will feature final designs. Teams will clearly show how stakeholder input shaped their designs, and why they arrived at the final solutions. Public comment will be gathered and analyzed, and provided to the Jury and City Team as an input to decision making.

Regional Briefings

Given the regional interest and potential impact of the Project at various scales, at the end of each Design Round, the Project Team may organize a Regional Briefing to share updates with regional stakeholders. Representatives from Design Teams will be invited to participate, although no new materials would be expected to be developed.

Jury

The Design Competition Jury consists of 10-voting members from various sectors and interest groups, reflecting community, regional and stakeholder interests in the implementation of a pilot sand retention project. Additionally, 5-non-voting, advisory members will also be invited to advise, share their perspectives and participate. Juror's applied to participate in this role, and the jury's composition was established to create a portfolio of expertise and perspective that is beneficial to the final pilot project outcome. Jurors will be invited to Public Workshops (though are not expected to attend all). After the 3rd design round, the Jury will review the final designs, and vote to select a preferred design, and will draft a recommendation which the Project Team will submit to City Council for a final decision.

Below is a complete list of jurors assembled for this project.

Voting Members:

1. **Coastal Management Expert—Dr. Lesley Ewing PE**, former Sr. Coastal Engineer, California Coastal Commission
2. **Permitting Viability Expert—Dr. Charles Lester, Director**, Ocean and Coastal Policy Center, Marine Science Institute, UC Santa Barbara
3. **Surf Resource Preservation—Chris Abad**, Director, Oceanside Boardriders Club
4. **Nearshore Marine Expert—Dr. Dan Pondella**, Professor, Biology; Director, Vantuna Research Group, Occidental College
5. **Nearshore Marine Expert—Karen Green**, Division Manager, Marine and Aquatic Ecosystem Resources, Tierra Data, Inc.
6. **Coastal City Representative— Councilmember Dwight Worden**, Del Mar City Council, Chair of SANDAG Shoreline Preservation Working Group
7. **Coastal City Representative— Councilmember Joy Lyndes**, Encinitas City Council
8. **Community Representative—Bob Ashton**, President/CEO, Save Oceanside Sand (SOS)
9. **Community Representative—Scott Ashton**, Chief Executive Officer, Oceanside Chamber of Commerce
10. **Community Representative—Ernie Prieto III**, Local Business Owner (Oceanside Sea Center), Boat Captain and sits on City of Oceanside Harbor and Beaches Committee

Non-Voting Members:

1. **Federal Agency— Dr. Arye Janoff**, Coastal Geomorphologist, Planner, and Manager
2. **State Agency—Jeremy Smith**, Coastal Engineer, California Coastal Commission
3. **Grant Funder—Megan Cooper**, Deputy Regional Manager, California State Coastal Conservancy
4. **NGO—Mitch Silverstien, Policy Coordinator**, Surfrider Foundation San Diego Chapter
5. **NGO—Curt Busk, President**, Buena Vista Audubon Society

RE:BEACH

OCEANSIDE

Jayne Timberlake
Coastal Zone Administrator
City of Oceanside



RE:BEACH DESIGN TEAM COMPETITIORS

1. Deltares USA (Dutch Team)
 - With MVRDV
2. SCAPE (NYC Team)
 - With Dredge Research Collective and ESA
3. ICM (Aussie Team)



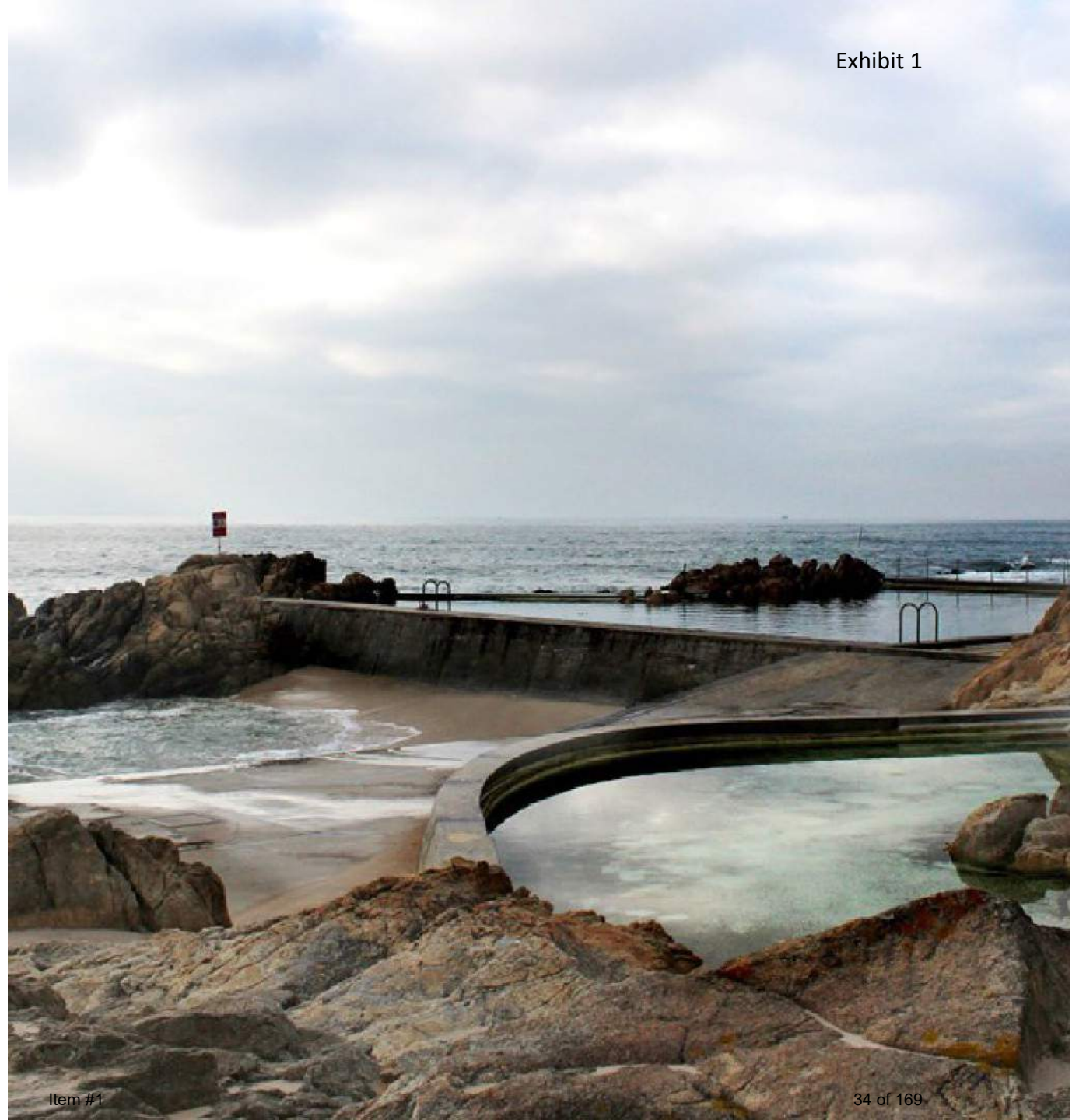
REBEACH.ORG

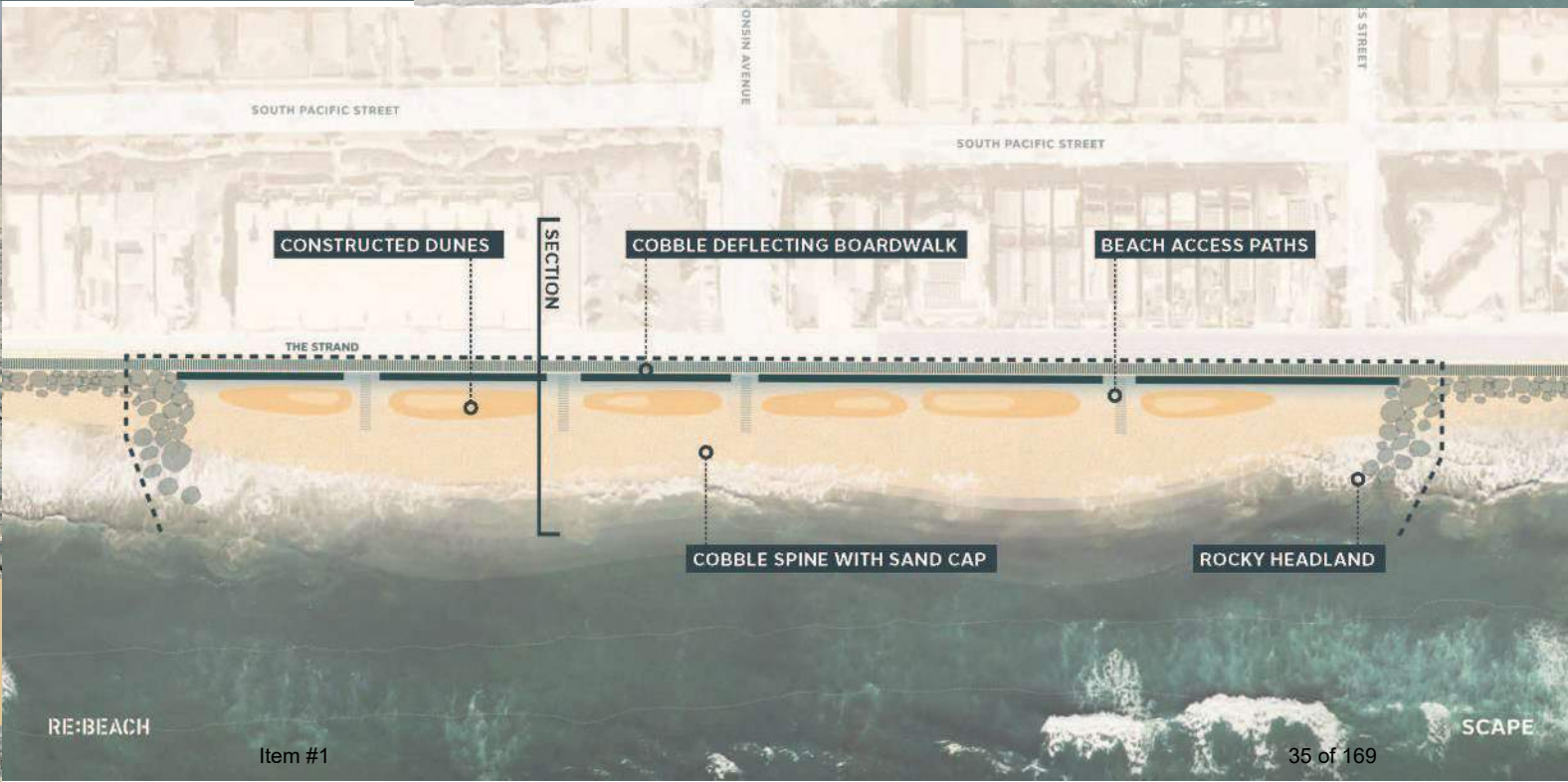
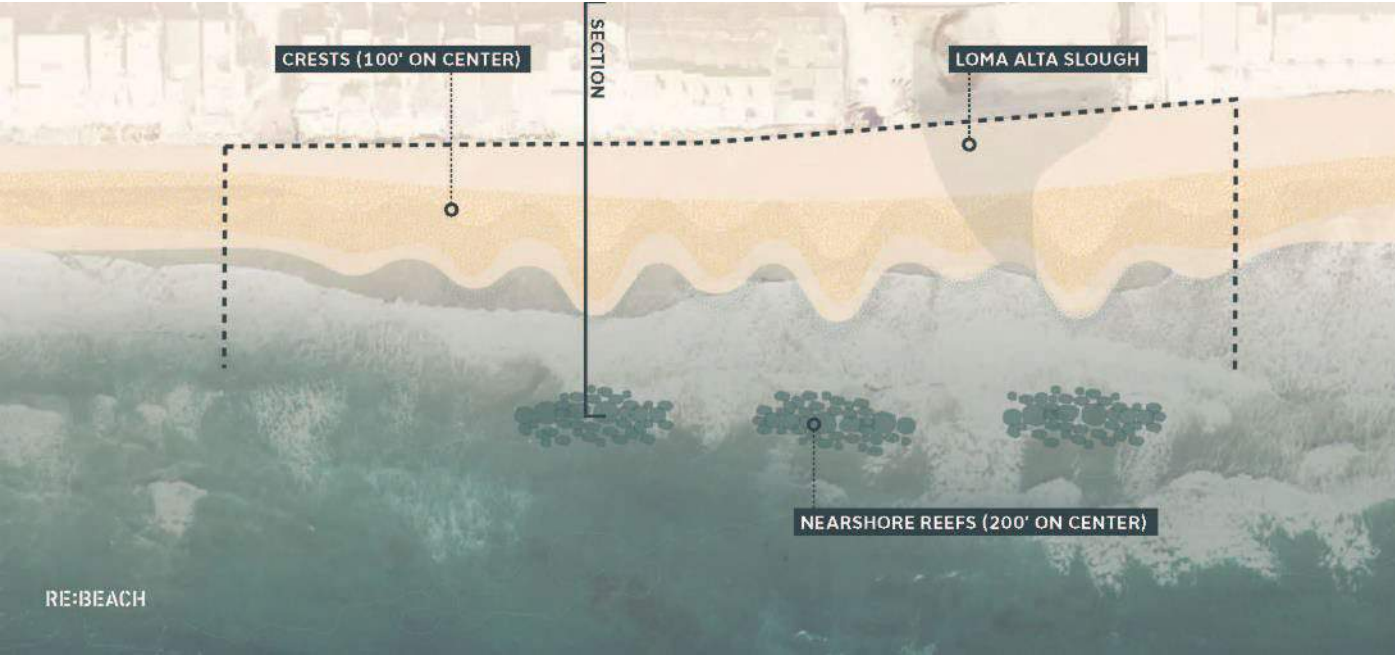
PUBLIC WORKSHOP ONE





Deltares + MVRDV





SCAPE

1. Submerged patches
2. Headland for top of beach sand trapping and public amenity
3. Reef/ nearshore sand trap
4. Bypassing pump outlet from Headland



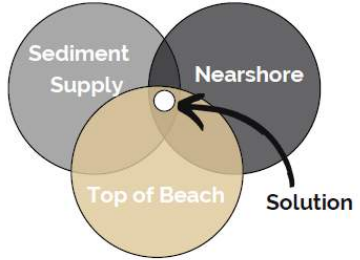
Potential Layout



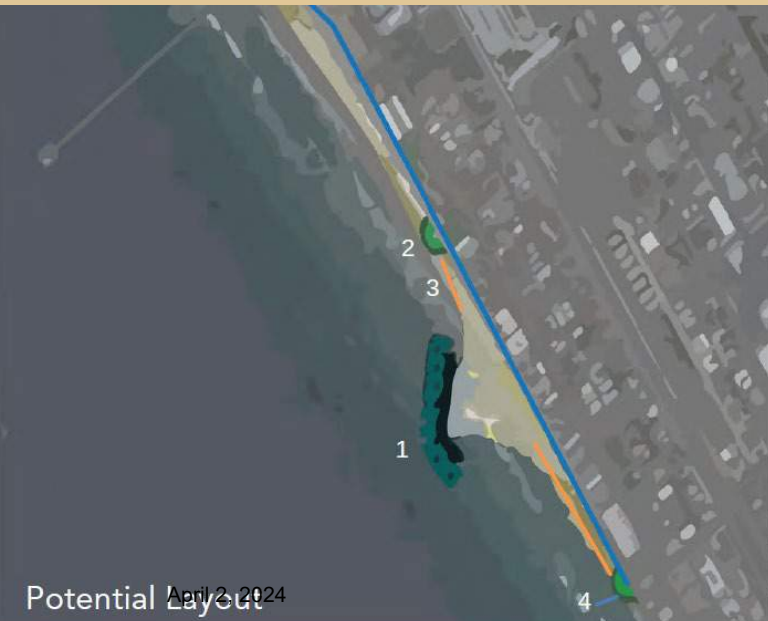
Exhibit 1



INCLUDES ELEMENTS TO TARGET



ICM



Potential Layout



PUBLIC WORKSHOP TWO

- **OCTOBER 17, 4-7p Oceanside Museum of Art – PLEASE ATTEND 😊**
- Major Design Proposed
- Design Criteria
 - How design concept(s) meet design criteria
 - Downdrift impacts addressed through adaptability
- Public Outreach
 - How Public Workshop feedback influencing design

REBEACH.ORG

Contracting & Onboarding

- Week 1:** Notice Sent
- Week 2:** Onboarding Begins
- Week 3–4:** Onboarding Sessions
- Week 5:** Contracts Finalized

Design Round 2

- Week 4:** Internal Review
- Week 6:** Charrette
- Week 8:** Public Workshop
October 17

City Council Vote & Public Event

- Week 1:** Jury Vote
- Week 3:** Consistency Review
- Week 6:** City Council Vote
- Week 7:** Public Event

MAY 31–JUN 26

JUL 3–AUG 21

AUG 28–OCT 16

OCT 23–DEC 11

DEC 18–JAN 29

Design Round 1

- Week 4:** Internal Review
- Week 6:** Charrette
- Week 8:** Public Workshop
August 29

Design Round 3

- Week 4:** Internal Review
- Week 5:** Charrette
- Week 8:** Public Workshop
December 13



Design Teams want your feedback to help design the right solution for Oceanside and the region!

Public Workshop Two
October 17, 4-7p at OMA

**RSVP and learn
more at**

REBEACH.ORG

Attachment B

RE:BEACH

OCEANSIDE

Jayne Timberlake
Coastal Zone Administrator
City of Oceanside



COASTAL PROCESSES IN OCEANSIDE



Photo source: UCSB Aerial Library



Photo source: UCSB Aerial Library

SAND MANAGEMENT IN OCEANSIDE

Year	Activity	Sand Nourishment (Cubic Yards – CY)
1942 – 1944	Camp Pendleton Harbor – Initial Construction	1,500,000
1958	Camp Pendleton Harbor – Improvements	800,000
1963	Small Craft Harbor – Initial Construction	3,400,000
1966	Harbor Mouth Dredging and Sand Disposal	684,000
1981	Harbor Mouth Dredging and Sand Disposal	863,000
1982	Harbor Mouth Dredging and Sand Disposal	922,000
1982	San Luis Rey River Dredging	1,300,000
1989 – 1992	Sand Bypass System	124,300
2001	Regional Beach Sand Project I	421,000
2012	Regional Beach Sand Project II	293,000

RE:BEACH OCEANSIDE OBJECTIVES

- **Main Objectives**

- Buffer the coastline with sand
- Extend sand nourishment efforts

- **Design Competition – WHY?**

- Encourage innovative sand retention
- Early regulatory involvement
- Promotes public outreach
- Transparency in decision making
- Stimulates interest
- Promotes international and nationwide coverage
- Showcase solutions for others



RE:BEACH COMPONENTS

- **RE:BEACH Players**
 - Jury/Advisory Panel
 - Project Team
 - City Team
 - Design Teams

- **Design Criteria**
 - Established criteria and performance standards
 - Physical
 - Environmental
 - Financial
 - Social
 - Regional
 - Rubric for evaluating designs

SPEED BUMP - TOP OF BEACH - HEADLAND & BERM TWO HEADLANDS AND LOW COBBLE BERMS (ADJUSTABLE)

Design Criteria 1 Physical	Design Criteria 2 Financial	Design Criteria 3 Environmental	Design Criteria 4 Social	Design Criteria 5 Regional
<p>Performance Goals. 0 to 3 years. Minimal impact on beach following construction and nourishment (wide beach). 3 to 15 years. Stabilization of upper beach to allow for dune development.</p> <p>Positioning. Locations focused on providing maximum benefit to beach with greatest public access and usage.</p> <p>Design. 30-year design life based on materials, crest height & experience. Replicates natural headland features throughout the Southern Californian coastline. Rock shell can incorporate local cobble into rock bags.</p>	<p>Initial Construction. \$954+ per Headland</p> <p>Maintenance. ~\$200/yr per Headland (~5% annual allowance)</p> <p>Low maintenance requirements if properly designed and constructed, including annual inspection and removal of debris, vegetation or rubbish.</p> <p>Adjustable berm works as required during pier stage</p> <p>Rock armour may require re-stacking or topping up of rock within 10 to 20 years or after severe storm conditions.</p>	<p>Designed not to impact existing nearshore habitats and improve beach ecosystems.</p> <p>Helps to restore natural beach sand to Ocean side.</p> <p>Rock shell provides substrate and structure for marine habitat.</p> <p>Potential for on-land designated green areas on headland, with flora for targeted species.</p>	<p>Provides improved beach stability and wider beach at areas of greatest public usage and access at Ocean side.</p> <p>Provides transformative opportunities for additional public amenities (benches, hospitality, services etc)</p> <p>Provides opportunities for increased access to the beach for public.</p> <p>Provides 180 degree viewing opportunities of the beach and surf for public.</p>	<p>Easily replicable concept with multiple transformative opportunities for public benefit.</p> <p>Headland space can be designed to provide specific benefits to local area (ie. surf museum display at Ocean side).</p> <p>Low impacts to longshore transport and improved bypassing around rounded headland.</p>

*Cost estimates are high level for comparative discussion only and not for quotation purposes. Subject to the detailed design stage.

DESIGN CRITERIA: ENVIRONMENTAL BENEFITS

DUNEPARK HABITATS	EXISTING CONDITIONS	DUNEPARK GOALS
<p>Dunepark intends to create/restore the following habitats:</p> <p>SANDY BEACH: Approx 0.80 - 1 acre</p> <p>COASTAL DUNE HABITAT: Approx 0.60 - 0.75 acres</p> <p>BLUFF HABITAT: Approx 0.20 - 0.5 acres</p> <p>ROCKY INTERTIDAL: Approx 0.60 - 0.75 acres</p> <p>ROCKY SUBTIDAL: Approx 0.20 - 0.50 acres</p>	<p>The site contains the following conditions:</p> <p>Approx 1 acre of existing parkland (town, pavement, playground). In the Dunepark proposal, this area will be converted into a mix of bluff habitat, coastal dune habitat and sandy beach.</p> <p>Approx 0.70-3 acres of cobble berm and small dry sand area will be converted into a sandy beach condition</p> <p>Approx 0.50 to 0.75 acres of intertidal cobble/wet sand converted to remain intertidal cobble and wet sand</p> <p>Approx 0.20 to 0.50 acres of open water converted to rocky habitat</p>	<ol style="list-style-type: none"> 1. Replicate/restore coastal habitats in Ocean side. Selecting rocky areas to place cobble berm habitat, dune habitat and rocky surf habitat. 2. Increase access to existing sandy beach playgrounds. The design focuses on creating cobble berms and rocky surf habitat. 3. Design variability to maximize conversion of high capacity habitat. The conversion is based on an area of a highly eroding sandy beach and is not currently occupied as a high quality habitat for sandy beach being given the option.

RE:BEACH COMPETITORS

1. Deltares USA + MVRDV (Dutch Team)
2. SCAPE + ESA + Dredge Research Collaborative (NYC Team)
3. International Coastal Management (Aussie Team)



RE:BEACH PUBLIC WORKSHOPS

Public Workshop 1 – August 2023



Public Workshop 2 – October 2023



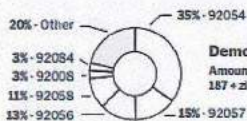
Public Workshop 3 – December 2023



Attendance
more than 220
attendees



Duration
4-7pm PT,
3 hours



Demographics
Amount of Responses:
187 + zip codes



Deltares + MVRDV

Attachment 8





SCAPE +ESA + Dredge Collaborative



- 1 Submerged patches
- 2 Headland for top of beach sand trapping and public amenity
- 3 Reef/ nearshore sand trap
- 4 Bypassing pump outlet from Headland



ICM



Bypass "tap" turn on/off as needed

Bypass elements multi-purpose

Booster can be electric pump



Bypass Pipe under "Seat"

- Adds boundary from beach to road
- Allows for beach level to raise & SLR
- Access to pipe maintenance

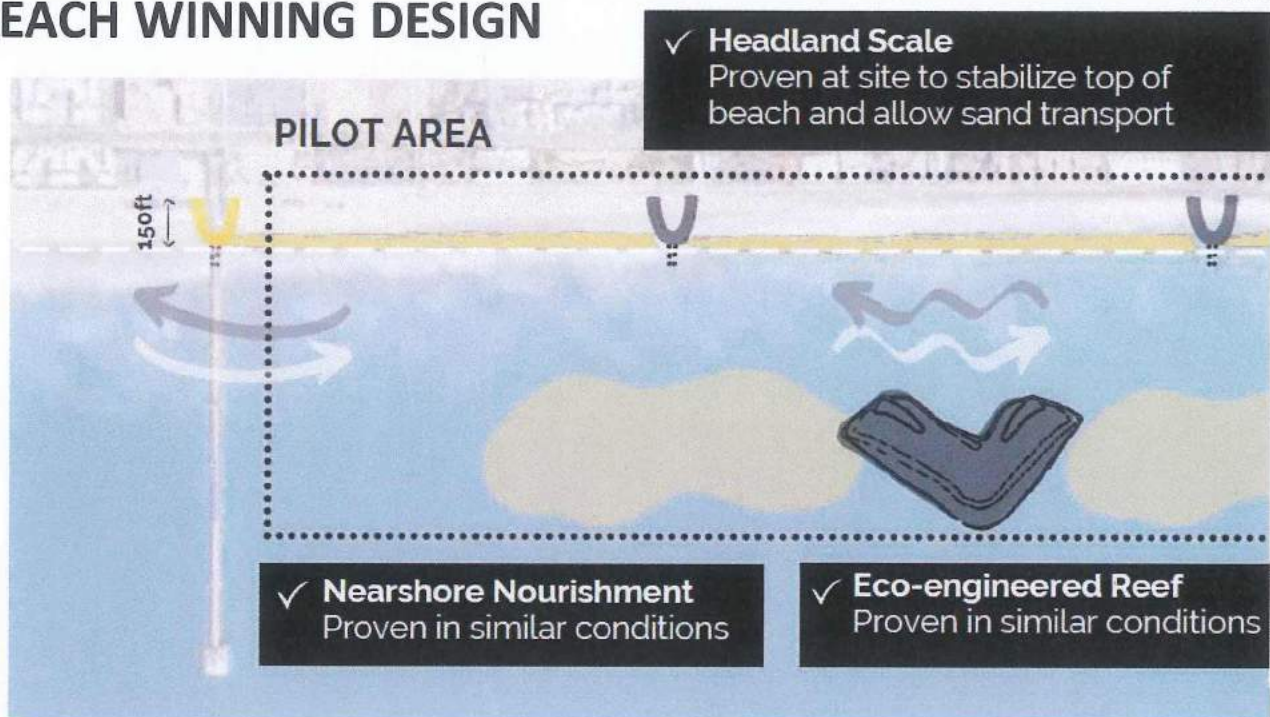
Booster Pump under "Steps"

- Hides pump stations
- Seating for public use/ watching surf comp.



Scan for bypass info & examples

RE:BEACH WINNING DESIGN



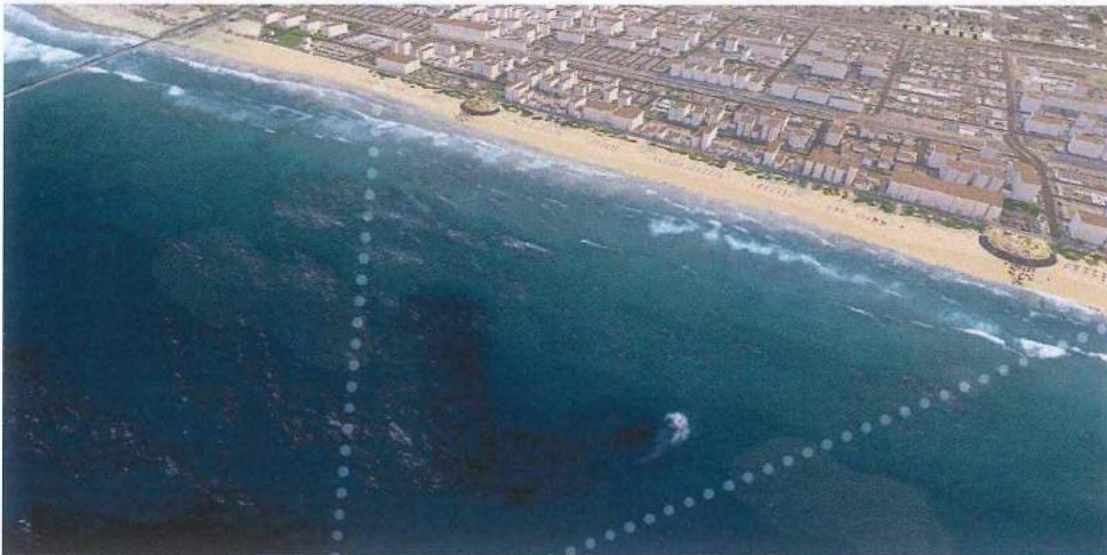
RE:BEACH WINNING DESIGN – HEADLANDS



RE:BEACH WINNING DESIGN – ARTIFICIAL REEF

“LIVING SPEED BUMPS” & COASTAL RESILIENCE

Slow down natural processes to retain sand longer. Not 'trap' sand.



RE:BEACH TIMELINE



WHAT HAPPENS AFTER THE DESIGN COMPETITION?

Attachment B

Final Engineering and Design:

- ~1.5 to 2 years
 - Shovel-ready Project in early 2026
- Siting analysis
 - Utilize modeled design concepts in different locations
 - Seagaze to Wisconsin
 - Wisconsin to Buccaneer Beach
 - a selected location between Buccaneer Beach and Buena Vista Lagoon

Environmental compliance and permitting

- Programmatic Environmental Document
- Resource agency permits (CCC, USACE, RWQCB)
- Adaptive management program
 - Define triggers & management actions
 - Closely coordinated with region.

Public Outreach and Regional Engagement

- SANDAG Shoreline Preservation Working Group
 - Sediment Management Technical Task Force
- C7 Coastal Cities Meetings
- San Diego Regional Climate Collaborative
- Beach Ecology Coalition
- Staff to staff discussions
- Other engagement opportunities



OCEANSIDE COASTAL MANAGEMENT

Current Coastal Resiliency Efforts

- RE:BEACH Oceanside
- Army Corps of Engineers Oceanside Mitigation Study
- Buena Vista Lagoon Enhancement Project
- Loma Alta Creek Enhancement Project
- SCOUP Projects
 - Solana Highlands
 - Seagaze
- San Luis Rey Estuary Restoration Project
- Coastal Dunes Restoration Project

Collaborations

- C7 Meeting
- SANDAG Oceanside Littoral Cell Technical Taskforce
 - Shoreline Preservation Working Group taskforce
- Problem Solvers Caucus
- Buena Vista Lagoon Joint Powers Authority
- San Diego Regional Climate Collaborative
 - Coastal Resilience Road Map
- Coastal Dunes Network



Attachment B



Thank you for your time!

Council Workshop
January 31, 2024
5:30p

Learn more at
REBEACH.ORG



STAFF REPORT*CITY OF OCEANSIDE*

DATE: January 31, 2024

TO: Honorable Mayor and City Councilmembers

FROM: City Manager's Office

SUBJECT: **RE:BEACH OCEANSIDE WINNING DESIGN WORKSHOP**

SYNOPSIS

Staff recommends that the City Council take the following actions for the RE:BEACH Oceanside Coastal Resilience Competition:

1. Receive the conceptual alternatives and concur with the following staff recommended options:
 - a. Approve the staff and jury recommended selection of International Coastal Management as the winning design team, with its Living Speed Bumps concept
 - b. Approve the staff and jury recommended modifications to the selected design concept
2. Authorize staff to proceed with final design, engineering and environmental compliance tasks of the Phase 2 Sand Nourishment and Retention Pilot Project

BACKGROUND**Project History**

Since construction of the Camp Pendleton Boat Basin and City's Small Craft Harbor (Harbor Complex), over 21 million cubic yards (cy) of sand have been artificially placed on City beaches from either dredging activity to build the two harbors, the removal of sediment from the San Luis Rey River, the U.S. Army Corps of Engineers annual navigation dredging program or one-off, local or regional beach nourishment events. Despite all these efforts, coastal areas south of Harbor Beach (i.e., south of South Jetty) have been largely unable to sustain a dry sand beach for recreational, ecological and coastal storm damage protection purposes.

In 2020, the City conducted a year-long preliminary engineering evaluation and Feasibility Study to identify deficiencies in current coastal management actions as well as to determine a suite of solutions to lessen long-term beach erosion and mitigate the effects of the Harbor Complex. The Feasibility Study (Phase 1) concluded that 1) a high-quality source of sand, coupled with a beach nourishment program, should be

identified to provide more efficient and consistent beach nourishment opportunities, and 2) retention structure(s) are desirable as a means of retaining placed sand, since historical surveys and anecdotal data have shown that placed sand does not persist on most of Oceanside's beaches.

At an August 2021 public workshop, the City Council provided staff direction to pursue the recommendations given in Phase 1. Specifically, staff was directed to move forward with the environmental analysis, design, and permitting of a Phase 2 pilot project that would provide both beach nourishment and sand retention options. At that time, consideration was given to a pilot project that incorporated a series of groins. However, Council's direction also provided for flexibility when it came to determining the final design to be pursued.

In May 2022, the City hired its first full-time Coastal Zone Administrator who brought an enhanced level of technical expertise in support of the City's efforts while also providing an opportunity to further explore best practices in the area of coastal management.

On January 25, 2023, the City Council approved a contract with GHD Inc. (GHD) for the Phase 2 Sand Nourishment and Retention Pilot Project. The main tasks outlined in the Phase 2 scope included:

- Community and Stakeholder Engagement
- Baseline Monitoring Development
- Engineering, Analysis and Design
 - Preliminary Design through a Design Competition (RE:BEACH)
 - Final Design and Engineering
 - Plans and Specifications
- Environmental Compliance and Permitting

Since approval of the Phase 2 contract, development of a preliminary design for a sand retention concept has been underway through the execution of a public design competition, called RE:BEACH Oceanside Coastal Resilience Competition. The RE:BEACH competition process was developed by the Project Team, comprised of the City's Coastal Zone Administrator, GHD and Resilient Cities Catalyst, with ongoing support from a City Team comprised of City staff representatives from the Development Services, Public Works, Lifeguard and City Manager departments.

Design Criteria and Jury Selection

To guide the competing design teams through the competition and aid in the selection of a winning sand retention concept, a jury (Jury) was created early in the RE:BEACH process by the Project Team and City Team and announced in May 2023. To determine the suitability of concepts and to judge and inform the development of a sand retention design competition, community members and regional experts from distinct categories of coastal management were asked to submit an application to be part of the Jury. The composition of the Jury was intended to appropriately reflect the various interests in implementation of a project of this type and advise the City staff on a final

recommended pilot project. Jurors were also expected to be receptive to the concept of artificial sand retention as the City Council's prior direction was to pursue a sand replenishment and retention program. The distinct jury categories to be represented included the following: coastal management, Oceanside community representation, environmental compliance/permitting viability, surf resource preservation, nearshore marine resources, regional/coastal city representation, project funding, and state and federal regulatory agency representation. The Jury applicants were then reviewed and ranked by the Project and City Teams, and a list of voting and non-voting members was subsequently generated and confirmed. The Jury included Dr. Lesley Ewing, former Coastal Engineer for the California Coastal Commission, Bob Ashton, President/CEO of Save Oceanside Sand, Chris Abad, President of the Oceanside Boardrider's Club, officials from down coast cities, and Mitch Silverstein, San Diego Policy Coordinator for Surfrider Foundation. A comprehensive list of the Jury is available in Attachment 1 and 3.

Throughout the three design rounds of the RE:BEACH competition, jurors were invited to participate in the Public Workshops, were regularly briefed by the Project Team on the designs as they evolved with public input, and provided opportunities to discuss and review public input, including input received during the final public workshop on December 13, 2023.

The development of the Jury early on in the competition was intentional, as they were an integral part of creating the Design Criteria (Attachment 1) by which the design concepts would be guided and ultimately judged against. To guide the criteria development, RE:BEACH established a mission: to construct an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits, with all designs required to meet the bare minimum objectives:

- Align with the community character and history of place within the City of Oceanside
- Leverage previous analysis and feasibility studies completed to-date
- Maintain a forward-thinking design that incorporates adaptive capacity of solutions to future coastal conditions while addressing chronic erosion issues
- Be technically feasible, financially viable, and environmentally and socially acceptable

The Design Criteria were meant to fulfill two core objectives: (1) provide a boundary of the scope of design for the proposed solutions and (2) generate a set of objectives that Design Teams, and their solutions could be measured against.

With both the mission and objectives in mind, the Design Criteria addressed parameters involving physical performance, financial confines, environmental considerations, social implications and regional benefits and established the backbone of the initial design proposal solicitation.

Solicitation of Design Competitors

The Project Team invited a select number of firms to respond to the RE:BEACH proposal solicitation, based on a firms' past project experience and expertise. Due to the multi-faceted aspects of the Design Competition, firms were encouraged to form collaborative teams comprised of multiple firms that encompassed experienced professionals in a range of disciplines. Approximately 36 targeted firms were sent the solicitation, with 6 teams forming and ultimately proposing to be part of the competition. Using broad, consistent evaluation criteria, the submitted applications were narrowed down to three competing teams, based on experience, proposed approach and track record of delivering innovative solutions. The three selected Design Teams were:

- SCAPE Landscape Architecture with Environmental Science Associates (ESA) and the Dredge Research Collaborative. SCAPE is a New York City based landscape architecture and urban design firm with offices in New Orleans and San Francisco. The team works to create well-designed, ecologically restorative and socially engaged landscapes through diverse forms of design. ESA is an environmental consulting firm, specializing in design, permitting and implementation across the West Coast, bringing regional environmental science and engineering expertise to SCAPE's concept. Dredge Research Collaborative is an independent non-profit that provides leadership on sediment use and transport across the United States, and an in-depth understanding of sediment transport.
- Deltares with Deltares USA with MVRDV: Deltares is a nonprofit, solution-driven Dutch firm which boasts a robust knowledge of major societal issues and realizes the urgency behind finding equitable, sustainable solutions along coastlines. Deltares' mission revolves around working passionately to find answers to some of life's biggest environmental questions. MVRDV is a global architecture and urban design firm that focuses on contemporary issues, especially resilience, in regions across the world.
- International Coastal Management (ICM): ICM is an Australia-based firm that was founded in 1989. ICM's mission is to provide the best sustainable and innovative solutions in coastal engineering, while protecting and enhancing marine environments worldwide. From the Gold Coast in Australia to Europe and the Caribbean, the team of coastal engineers has experience with various technical coastal designs, having completed projects for SeaWorld, the Gold Coast Waterways Authority, the Nature Conservancy, and more.

Design Round Charettes and Public Workshops

Three Design Rounds or Charettes were planned between June to December 2023 to support the Design Teams in the development of their final sand retention concept. Design Teams participated in a Charette in the sixth week of each of the three Design Rounds where the Project Team, City Team and/or Jury provided feedback and comments on the progress made on pilot project concepts. Each Design Round

culminated with a presentation to the public at an in-person Public Workshop that was recorded with digital versions of the presentations available for subsequent viewing.

Charrette One was focused on an introduction to conceptual ideas and getting input from the City Team and Project Team on coastal processes and high-level visioning for Oceanside and the regions' coastal areas. At Charette Two, Design Teams were asked to share preliminary concepts and approaches, with ample opportunity for Design Teams to ask questions of the Project Team and gain insight on how to improve designs. At Charette Two, Design Teams also focused on how their concepts were successfully achieving the established Design Criteria. At Charrette Three, Design Teams were asked to enhance approaches and concepts, focusing on financial evaluations and technical refinement with input from the Project Team, City Team and Jury.

Each Public Workshop supported a similar program, with the Design Teams presenting their latest concepts and the public being given the opportunity at each workshop to provide direct comment and/or input via questionnaire to assist in refining the approaches. The Design Teams were required to develop figures, graphics, maps, and visual resources for use during each of the Public Workshops.

Public Workshop One aimed to gather broad community input on the Design Teams' initial design approaches, giving each team an opportunity to further gain perspective on community stakeholder goals and desires for the coast, and collect directional feedback to inform the designs going forward. Public Workshop Two depicted refined designs, with the technical aspects of sand retention more developed and elements visualized with opportunities for additional feedback. Public Workshop Three featured the final designs. The Design Teams were able to clearly show how stakeholder input shaped their designs, and why they arrived at their final solutions.

All Public Workshops were open to the public and were available virtually via a recording of the presentations with accompanying digital versions of materials. Each Public Workshop was heavily noticed via press releases, on the City's webpage, and on social media platforms, as well as via pop-up events. The workshops were very well-attended with approximately 150-220 persons participating at each workshop. Aggregated comments from all three Public Workshops are provided in the Community Input Summary (Attachment 2).

Given the regional interest and potential effect of the implemented project at various scales, the Project Team shared updates with regional stakeholders at each of the downcoast cities within the Oceanside Littoral Cell. Upon each jurisdictions' request, informational presentations summarizing the RE:BEACH competition, followed by a question and answer period, were made from October to December 2023 at the following cities:

- October 2023, Carlsbad Beach Preservation Commission
- November 2023, Del Mar City Council
- November 2023, Solana Beach City Council

- December 2023, Encinitas City Council

Additional local and regional outreach of the project occurred during the design competition:

- March 2023, Oceanside Coastal Neighborhood Association
- March 2023, Oceanside Chamber of Commerce
- May 2023, Smart Coast Cities Summit
- September 2023, SANDAG Sediment Management Technical Task Force
- October 2023, C7 Coastal Cities Meeting
- November 2023, Oceanside Chamber of Commerce
- November 2023, San Diego Regional Climate Collaborative
- November 2023, Headwaters to Ocean Conference
- December 2023, Oceanside High School

Prior to the initiation of RE:BEACH, leading up to the City Council decision to approve the Phase 2 contract, the following public outreach efforts were made:

- May 2022, Encinitas Environmental Commission
- June 2022, SANDAG Shoreline Preservation Working Group
- October 2022, Carlsbad Beach Preservation Commission
- October 2022, Save Oceanside Sand (SOS) Member Meeting
- November 2022, SANDAG Shoreline Preservation Working Group

Jury Deliberation

The Jury, comprised of voting and non-voting members, designated a winning design concept during the final Jury Deliberation held on December 14, 2023. The Jury utilized the distinct parameters outlined in the Design Criteria to evaluate the designs throughout the competition, leading to critical analysis of the designs at the final Jury Deliberation. This recommended winning design aligns with the City staffs' recommendation for a sand retention conceptual design that, upon City Council direction, can be moved into the final engineering and environmental compliance tasks under the approved Phase 2 Project contract. The Jury's collective comments and feedback assisted City staff in the development of recommendations to support the winning design. The winning design and associated Jury and City staff recommendations are described in detail in the Analysis section below. A detailed summary of the Jury Deliberation, including the Jury roster and their specific recommendations, is found in Attachment 3.

ANALYSIS

Staff and the jury recommend that the City Council approve the preferred alternative: International Coastal Management's "Living Speed Bumps" concept. The Living Speed Bumps concept proposes to construct one multi-purpose offshore artificial reef and two headlands, supported by nearshore and on beach nourishment, (Figure 1; Attachment 4), in a location that shall be determined in the next phase of the Project.

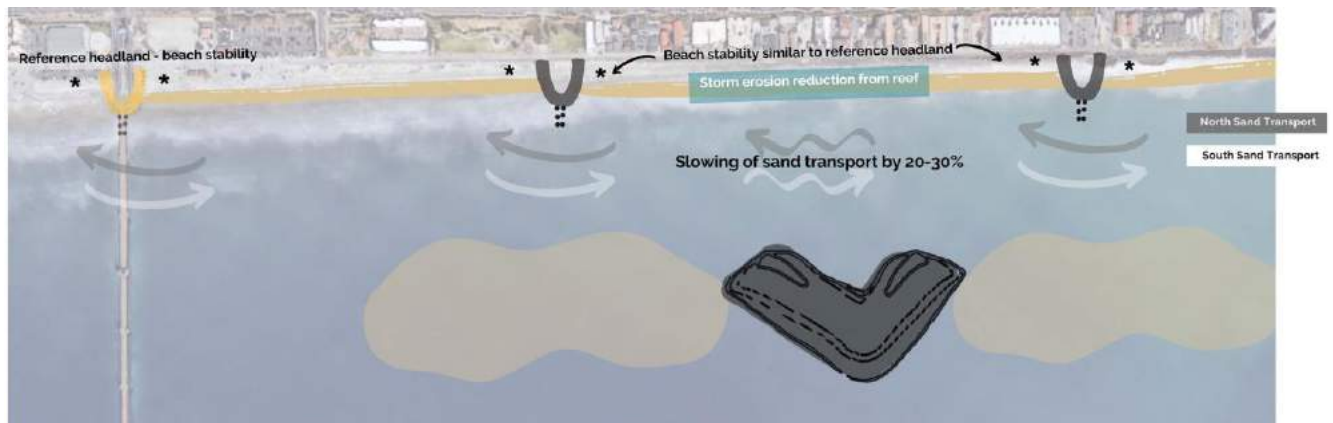


Figure 1. Conceptual diagram of Living Speed Bumps design (final location TBD)

The conceptual reef design that ICM developed included two options for reef materials (i.e., quarry rock or geotextile bags) and included two different reef shapes and sizes. These design elements were based on ICM's prior project experience on the Gold Coast of Australia. As proposed, the reef shall be placed at a depth of approximately 40', which is estimated to be 900' offshore. Two artificial headlands would be positioned on the shore both north and south of the reef. Conceptually, ICM suggested the headlands extend roughly 150' seaward and be 150' long. The headlands would consist of rock outcrops that would assist with beach stabilization, creating more opportunities for intertidal habitat, and mimicking natural and artificial headland formations in southern California.

The offshore reef's design intent would be to dissipate wave energy through wave breaking, which would in turn stabilize the beach in its lee (i.e., shoreward of the reef). The crest of the reef (i.e., how shallow the reef is) can be optimized to maintain longshore sediment transport around the reef. The reef would be designed to primarily stabilize the beach but improvements to surfing would also be a goal.

The diffraction of breaking waves by the reef utilizes wave energy to contribute to slowing the rate of longshore transport along the beach, and the formation of a salient to build beach volume, mimicking natural offshore reef structures local to the Californian coast. Similar natural reef structures that provide salient formed beaches include Crystal Cove, Aliso Creek and Salt Creek beaches in Orange County. The headland features would complement this salient formation and increase the performance of beach development.

It is important to note that the specific shape and size of both the reef and headlands will be determined in the next phase of engineering design where numerical modeling, leveraged from Phase 1, will be used to optimize the design to achieve the various project objectives. Other important design elements, such as a strategy for on beach and nearshore nourishment placement, will also be further developed in this phase. Back beach dunes will also be considered in the phasing plan for the project and can be deployed once the beach is stabilized.

Through the design competition, rough order of magnitude construction cost estimates were developed using standard material and labor rates to provide a consistent means to compare costs across Design Teams. These cost estimates are preliminary and will be refined in the next phase of design. A rough order of magnitude construction cost estimate of the Living Speed Bumps design is \$31-\$41M, depending on the specific shape and size of the features as well as the selection of the reef materials (i.e. sand filled geotextile bags or quarry rock). Annual maintenance costs of the beach sand and headlands were roughly estimated at \$500k.

Design Criteria Considerations

Overall, the winning ICM concept exceeds Design Criteria in many facets. The artificial reef, headlands and nearshore nourishment components allow for the continuation of natural coastal processes in Oceanside and beyond, as much as possible, while delivering on the retention of sandy beaches. Coupled with beach and nearshore nourishment, stabilization of the back beach is expected to begin within 3 years following completion of construction of the structural components. The need for ongoing maintenance is expected to be minimal once properly designed and constructed. Environmental conditions are expected to improve with construction, as beach habitat is expected to be restored and attract local and migratory shorebirds that once concentrated along the coastline. Socially, the concept adds safe access paths to the ocean through the headlands and increases park space and ocean viewing opportunities. Surf resources were a prioritized element in the design and will continue to be a focus as the design is refined. Regionally, the design supports the continuation of on-going longshore transport and natural coastal processes, maintaining natural function of the littoral cell and minimizing the potential for negative downdrift impacts.

Public Feedback

The ICM Living Speed Bumps concept overwhelmingly received positive input from the public for its professed ability to retain sand on the beach and provide other recreational benefits. ICM received an abundance of written comments from the public, stating their concept was their “favorite” or “best” option. Scalability potential was high with the ICM design according to public feedback, with application in additional areas of Oceanside’s coastline seemingly most feasible with this design. Similar to Jury feedback, recommendations from the public included a need to consider influences of the artificial reefs on sand bars to improve and/or maintain surf resources. Recommendations from the public also suggested that the design team conduct careful analysis of the structures placed and how they may impact the safety of surfers and swimmers. The public expressed a desire to see more natural elements in the design of the headland. A summary of public feedback provided throughout RE:BEACH is included in Attachment 2.

Suggested Modifications

The Jury provided valuable feedback and recommended modifications in its evaluation of the preferred design concept (Attachment 3). Notably, the Jury agreed that the ICM proposal seemed to be the most effective at beach stabilization, while taking into consideration local needs, such as adding naturalized park spaces in the headlands and preserving ecological and surf resources through their design. Additionally, the Jury recognized that the design had already been tested by ICM along similar coastlines in Australia, and therefore maintained confidence in the ability of ICM to deliver a successful pilot project with the greatest opportunity to be scaled up and applied in other areas of the Oceanside coastline once the success of the pilot project was proven to work locally.

The Jury and City staff recommend several key modifications to the design: (1) refinement of the headlands to use a more environmentally and/or aesthetically pleasing composition that blends better with natural coastal formations, (2) utilization of rock instead of geotextile bags for construction of the artificial nearshore reef, and (3) development a robust monitoring program that captures both ecosystem benefits and surf resource improvements/changes that the artificial reef may afford, which would be applicable to environmental permitting discussions with the resource/regulatory agencies.

- Refinement of the design of the artificial headlands and a thoughtful proposal for programming on top of the headlands. Several jurors requested the use of more natural materials and a headland design that better fits Oceanside's character. The finalization of the headland designs needs to consider the opportunity for creating multiple-benefits.
- Strong consideration of the use of natural materials (i.e. rock instead of geotextile bags) for the artificial reef. Most jurors raised concerns or objections to the geotextile materials proposed by ICM for three reasons: increased maintenance cost to replace or repair geotextile bags, the introduction of non-natural and/or plastics into the water, and related public perception and permitting issues. ICM responded to jury questions about the geotextile bag option, stating that the use of the geotextile bags versus rock allows the City to pilot the viability of an artificial reef to influence beach sand retention at a cheaper cost. Past projects in California that have relied on geotextile bags have experienced issues due to structural degradation with UV exposure and complications during removal that resulted in debris issues and logistical challenges. While material technologies have improved, and costs for using rock are much higher than geotextile bags, the Jury and Project team recommend going forward with a design that utilizes rock while still learning from ICM's experience with other materials.
- As the reef advances in design, the City should go further in exploring potential ecosystem and surf benefits that the reef could provide. The City should also be prepared to provide mitigation for habitat conversions (i.e. conversion from sandy subtidal habitat to rocky subtidal) that may be required by the Coastal Commission.

Design Competition – Non-preferred Alternative Concepts

Below is a description of the two non-preferred alternatives considered by the Jury for the RE:BEACH Oceanside Competition. A summary of all three design concepts is also available in the table below.

- SCAPE Landscape Architecture with ESA and the Dredge Research Collaborative
 - Dunepark/Hybrid Beach
As proposed, this team’s design could extend the existing 5-30 feet of usable beach area to 40-100 feet by elevating and retreating the Strand eastward and transforming an existing playground and lawn at Tyson St. Park into a dune area, called Dunepark. These on-land components would be supported by cobble crests in the intertidal zone and nearshore reefs in the subtidal zone, which proposed to encourage modest accretion of sand on the foreshore called the Hybrid Beach. A walking path through the dune area as well as dedicated sandy walking paths to the shore through the cobble crests was also proposed.
 - Jury Feedback
 - The Hybrid Beach concept was perceived to provide the least amount of sand retention and accretion, which brought into question the structural integrity and user experience of cobble-based design elements.
 - While the Hybrid Beach design was innovative and interesting, it was untested and had the potential to require more frequent and costly maintenance.
 - Dunepark was lauded as an exceptional concept that could be explored at a later date beyond RE:BEACH by the City of Oceanside, as an improvement to the existing shoreline park at Tyson St.
 - Public Feedback
 - Dunepark proposed to create a more usable and appropriate Tyson Street Park, but retreat of the Strand seems arduous.
 - Overall, the public expressed a general concern around the Hybrid Beach concept feasibility and ability to perform, as it had not been tested or tried in any other location.
 - Cobble is challenging and difficult to walk on, making the usable beach space potentially less accessible and the design less lauded by the public.
- Deltares with Deltares USA with MVRDV
 - Green Dream Peninsula
This Green Dream Peninsula would mimic a natural peninsula structure, constructed out from publicly-owned beach front spaces, utilizing existing rock and imported quarry rock. The designed peninsula would jut out approximately 360 feet in length from the back beach, and 500 feet in

descending width. The concept was proposed to occur westward from any publicly owned beach access area, but grounded at Buccaneer Beach where the design would extend Loma Alta Creek to facilitate creek flows out to the ocean. The Peninsula space would allow for increased recreation opportunities, improved beach access and environmental enhancement.

○ Jury Feedback

- While the nature-based design elements of this concept were highly regarded, including the proposed naturally shaped headland, there were several concerns identified by Jurors, which included uncertainty of sand accretion on north and south sides of the headland, concern over water quality if located at Loma Alta Creek, and potential flanking impacts north and south of the structure into private revetments.
- While innovative, the design was perceived to exaggerate the overall public benefit coming from only one proposed headland.

○ Public Feedback

- The public expressed concerns over the placement of the feature at Buccaneer Beach and the potential impacts to surf resources.
- The public had difficulty understanding the potential scalability of this concept, as headlands may need to take on different shapes at different location to retain sand and the overall size seems marginal for the desired objective of maintaining a sandy beach.
- The public articulated some concerns over safety of beach goers in the accessing ocean-facing salt water pools and sustaining water quality with an urban creek flowing out adjacent to the pool.

	SCAPE	Deltares + MVRDV	ICM (WINNING DESIGN)
Overview of Concept	Dunepark shifts the Strand inland, and reconfigures existing space into dunes which connect to the Hybrid Beach, a perched sandy beach atop a cobble berm comprised of existing and imported cobble stabilized by 3 small cobble crests (50ft x100ft), 4 large cobble crests (65ft x 130 ft) and 4 nearshore reefs (70ft x 90ft).	One peninsula/headland (500ft x 360 ft) comprised of rock allows for sand nourishment activities to be stabilized and help restore usable beach area on both the north and south side of the peninsula	One submerged offshore reef (made of either rock 330ft x 610ft or geotextile bags 490ft x 900ft) and two 'living headlands' (150ft x 150ft) made of rock, cobble, and sand that are designed to mimic natural processes can improve sand retention and beach resilience.
Reasonable expectations for the concept to restore sandy beaches	Initially creates 30-100ft wide sandy, stabilized perched beach with a cobble berm. Most of the new beach area comes from the construction of the Hybrid Beach with partial sandy beach from Dunepark.	Initially creates 50-100 ft wide sandy beach directly north of the peninsula. The effective beach width decreases to about 40 feet in the first 0.5 mile north of the peninsula. Sand nourishment and accretion would also be anticipated south of the peninsula.	Initially creates 100ft wide sandy beach, with a nominal 1:25 slope to seaward. Our 'speed bump' approach is targeting a slowing of longshore transport by about 20% to 30% of existing conditions.
Concept integration with sediment management activities	The concept may require replenishing sand atop portions of the perched beach and/or atop and between the cobble crests after storms. The concept could be completely covered with a larger beach nourishment along the shore.	The design can make regular beach nourishment activities more effective by slowing down transport. Specific sediment management placement patterns north and south of the structure would be developed once final design and modeling is completed.	The design can assist regular nourishment activities by slowing longshore transport to retain and stabilize a sandy beach, and support a strategy of more cost-effective nearshore nourishment protocol.
Options for concept to be adapted and modified should undesirable effects be observed	The cobble berm will use some similar sized rounded rock to existing material so much of it could be left in place. If the larger rocks placed on the crests and reefs are displaced or deemed problematic, they may be re-distributed, removed or repurposed into the backshore cobble berm.	The sand retention effect can be adapted by seaward extension of underwater portion of the tip of the peninsula. Depending on desired bypassing/connectivity this can be altered even after construction. Removal of parts of the peninsula is not likely required, although it can be done from the land.	The reef, whether comprised of sand-filled geotextile containers or boulder rock, can easily be adapted to improve performance outcomes, or removed if necessary. The porosity and crest height of the low-crested berm can be easily adapted to increase/decrease sand bypassing by removing/adding re-usable rock-bags or returning cobble fill to the beach.
Largest risk or uncertainty around concept	There is a high degree of certainty around the stability of the upland Dunepark portion of the proposal. The Hybrid Beach applies novel concepts that hold uncertainty around the level of sand accretion and level of structural integrity.	The performance of the concept will depend on the quality and volume of sand nourishment activities over time will be determined by the state of the beaches. Some uncertainty of rip current formation but not different than for other coastal interventions.	Confidence that concept will result in a significant degree of slowing of longshore transport. Uncertainty around the exact degree to which sand is slowed and retained at the beach. The expectation of a 'surfing reef' should be properly managed as the reef's primary objective is sand retention and storm protection.
Rough Order of Magnitude cost estimates	Project Construction Total: \$19.8M (Hybrid Beach: \$6.2 M and Dunepark: \$13.6 M) Annual Operation and Maintenance: Typical winter - \$100k Large storm (i.e. 20+ year event) - \$780k Removal Costs: \$2.9M	Project Construction Total: \$11.1M Annual Operation and Maintenance: \$1.8M Removal Costs: \$3.9M	Project Construction Total: \$31.4M (geotextile reef), \$40.6M (rock reef) Annual Operation and Maintenance: \$500k Removal Costs: \$4.7M

Next Steps

The RE:BEACH Oceanside Coastal Resilience Design Competition is the conceptual design component under the Engineering, Analysis and Design task of the Phase 2 Sand Nourishment and Retention Pilot Project. To reiterate, the main tasks outlined in the Phase 2 scope include:

- Community and Stakeholder Engagement
- Baseline Monitoring Program
- Engineering, Analysis and Design
- Environmental Compliance and Permitting

GHD will continue to serve as the prime consultant and will contract with ICM, the approved winning design team, to prepare final engineering plans, siting for the proposed concept and construction specifications. As the prime consultant, GHD is responsible for preparing major deliverables, coordinating the work of subconsultants, managing the project schedule and budget, providing project status updates, and working with City staff to ensure that all components of the project are consistent with and complementary to one another.

Community and Stakeholder Engagement occurred throughout RE:BEACH and shall continue to occur throughout Phase 2. Community engagement will take the form of formal and informal public meetings, social media posts and surveys, and informational pop-ups.

The Baseline Monitoring Program has been ongoing since the kickoff of Phase 1. Baseline assessments will continue in Phase 2, providing a robust dataset for the engineering analysis, siting and design tasks. Baseline assessments incorporate current surveys conducted by Scripps Institution of Oceanography and citizen science-led efforts by Save Oceanside Sand into a coastal database. Once a design concept is selected, further details on additional monitoring components can be compiled that reflect specific metrics to focus on.

The Engineering, Analysis and Design task incorporates the findings from the RE:BEACH process, including input from community and stakeholder engagements and the ongoing baseline monitoring program. This phase is also complemented by the investigation into a reliable sand nourishment source and development of a sampling and analysis plan and report. Additionally, siting of the proposed project will occur through this task.

Public and stakeholder comments submitted throughout the design competition highlighted the need for solutions for all of Oceanside's coastline, in particular South Oceanside. A siting analysis will be performed that objectively evaluates potential locations for the pilot project to aide in the City decision making process. This analysis will evaluate three (3) potential locations for the pilot project south of the Oceanside Pier, where erosion impacts are the greatest. Sites to be evaluated are anticipated to

include: 1) the South Strand (Seagaze to Wisconsin), 2) Wisconsin to Buccaneer Beach, and 3) a selected location between Buccaneer Beach and Buena Vista Lagoon.

The siting analysis will focus on factors related to the successful implementation and performance of the pilot project at achieving its established goals and objectives. The study will incorporate various factors related to successful implementation, which include the following factors:

- Public amenities – benefits afforded by the project should maximize public benefits.
- Coastal access – proximity of the project to public beach access locations and parking.
- Land ownership – opportunities or constraints posed by land ownership boundaries at each location.
- Lifeguard operations – opportunities or constraints to lifeguard services at each location based on feedback from City lifeguard staff.
- Biological resources – influence of project location on biological resources at Loma Alta Creek and Buena Vista Lagoon.
- Downcoast impacts – influence of project location on downcoast sediment supply.
- Sand management logistics – influence of project location on ability to manage sediment supply within and around the retention system.

A technical memorandum will be produced summarizing the findings of this siting analysis. The memo will also address how the pilot project could be scaled up or phased in the future to provide a broader benefit to the City's shoreline. It is assumed the findings from this analysis will be presented at one community or stakeholder meeting, likely occurring in summer 2024.

While the conceptual level design that ICM provided will be further developed to specify the shape and size of both the reef and headlands through numerical modeling, physical modeling the reef and headland components could provide insight on shape, size, and orientation design elements related to physical wave processes, such as wave breaking and rip current formation. Physically modeling a reef may also provide greater confidence in the design, as physical modeling could assist will calibrating and support numerical modeling efforts.

Deliverables from this Engineering, Analysis, and Design task include final plans and specifications that will be utilized in the final task of Phase 2, the Environmental Compliance and Permitting task.

The Environmental Compliance and Permitting tasks will entail the development of a combined Environmental Impact Report and Environmental Assessment (EIR/EA), addressing both CEQA and NEPA requirements as needed, as well as the development of permit application materials and permit acquisition from the following state and federal regulatory/resource agencies:

- California Coastal Commission
- Regional Water Quality Control Board
- U.S. Army Corps of Engineers
- California State Lands Commission

Ongoing Coastal Monitoring and Management

While it is recognized that RE:BEACH is a pilot project for a specific geographic location, the intent of the pilot is to determine the viability of the proposed novel sand retention concept for use in additional areas throughout Oceanside's coastline. A robust monitoring program, to be established under the Phase 2 Project contract, will inform our knowledge about the performance and scalability of the winning RE:BEACH design. As monitoring commences, continual attention to coastal erosion will be undertaken through the City's broader Coastal Management Program. Ongoing coastal management efforts that extend beyond RE:BEACH include, but are not limited to:

- Utilization of SCOUP permits and placement of opportunistic sand as suitable beach sand becomes available
- Development of dunes on the back beach in coastal areas where dry sand currently persists and that are subject to either sand management needs or intermittent flooding
- Participation in regional sand nourishment efforts through SANDAG
- Pursuit of funding and environmental compliance for execution of the Buena Vista Lagoon Enhancement Project

FISCAL IMPACT

Funding for the Phase 2 Sand Nourishment and Retention Pilot Project has already been allocated and is covered by the American Rescue Plan Act (ARPA) Sand Replenishment Account. Of the \$2.59M authorized for the Phase 2 Project, \$1.93M are left to accomplish the remaining tasks. The Sand Replenishment account 837134221271 currently has an available balance of \$706,300.

INSURANCE REQUIREMENTS

The City's standard insurance requirements will be met.

COMMISSION OR COMMITTEE REPORT

Does not apply.

CITY ATTORNEY'S ANALYSIS

City Attorney analysis does not apply at this stage. Any future contracts and discretionary entitlements will require review by the City Attorney.

RECOMMENDATION

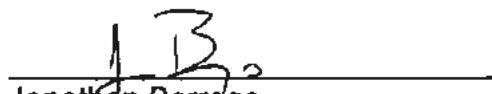
Staff recommends that the City Council take the following actions for the RE:BEACH Oceanside Coastal Resilience Competition:

1. Receive the conceptual alternatives and concur with the following staff recommended options:
 - a. Approve the staff and jury recommended selection of International Coastal Management as the winning design team, with its Living Speed Bumps concept
 - b. Approve the staff and jury recommended modifications to the selected design concept
2. Authorize staff to proceed with final design, engineering and environmental compliance tasks of the Phase 2 Sand Nourishment and Retention Pilot Project

PREPARED BY:


Jayme Timberlake
Coastal Zone Administrator

SUBMITTED BY:


Jonathan Borrego
City Manager

REVIEWED BY:

Hamid Bahadori, Public Works Director



ATTACHMENTS:

1. Design Criteria
2. Community Input Summary
3. Jury Deliberation Summary
4. Living Speedbumps Project Narrative

Design Criteria

The design criteria are meant to fulfill two core objectives: (1) provide a boundary of the scope of design for the proposed solution and (2) generate a set of goals that Design Teams, and their solutions can be measured against. To guide the criteria development, the Project is focused on a mission:

To construct an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits.

Any proposed solution should fulfill this mission, requiring all designs to meet the bare minimum objectives:

- Align with the community character and history of place within the City of Oceanside.
- Leverage previous analysis and feasibility studies completed to-date.
- Maintain a forward-thinking design that incorporates adaptive capacity of solutions to future coastal conditions while addressing chronic erosion issues.
- Be technically feasible, financially viable, and environmentally and socially acceptable.

With both the mission and objectives in mind, the design criteria are as follows:

Design Criteria One: Physical

- Designs should be in the coastal zone south of Oceanside Pier, focusing on the City's most highly eroded beaches.
- Designs should accommodate or be adaptive to up to 2-3 ft of sea level rise (that assumes 20-to-30-year design life), with minimal maintenance. The ability to accommodate or have adaptive capacity to greater amounts of sea level rise would be scored favorably.
- Identify a clear pathway for scaling of the pilot if it succeeds in its intention.
- Reference known design parameters from sand retention alternatives studied through the Phase One report.
- Designs should be structured with the ability to perform sand retention and retain structural integrity under impacts from existing and projected future coastal conditions, including:
 1. Extreme waves (100 yr. return interval – from northern and southern hemispheres), tides and winds (see companion documents, including Phase One report).
 2. Extreme temperatures.
 3. Public use, trampling & vandalism.
 4. Performance goals of a particular design should be articulated.
For example:
 - (a) Retain a particular average annual beach width within a particular reach
 - (b) Prevent overtopping beyond the beach at particular thresholds, such as 100-year total water level (TWL) and sea level rise scenario
 5. For any performance goals, teams should define the anticipated time-scale during which the project would be able to perform as designed.
- Designs should include natural and nature-based features, where feasible, which may

include onsite or imported materials, and/ or innovative materials designed for ocean compatibility.

Design Criteria Two: Financial

- Construction estimates for the designs should be presented for initial construction costs, annual operation and maintenance costs, and removal costs. Creative use or reuse of materials is encouraged to lower costs.
- Designs should articulate the maintenance activities and cost for design to maintain key functions such as retaining sand, providing recreational benefits, and/or minimizing impacts to downdrift sand supply.
- Creative solutions to finance the project are encouraged that fully value the proposed project's range of benefits (social, regional, economic, ecological). Especially if construction costs for designs exceed \$50M.

Design Criteria Three: Environmental

- Designs should encourage the rehabilitation of sandy beach habitat.
- Designs should minimize impacts to sandy beach ecosystems and nearshore marine ecology.
- Designs should be sensitive to where and which habitats may be converted as part of the design, what enhancements to ecology may occur, and where restoration of historic ecosystems may occur.
- All design references to ecological benefits should be qualified with detailed information on habitat classifications, quality, change over time, and uncertainties clearly explained.

Design Criteria Four: Social

- A successful sand retention project should increase usable beach space supporting coastal access and multiple opportunities for recreation.
- Designs should prioritize preserving or enhancing surfing resources and minimizing impacts to existing surf resources.
- Designs should seek to increase or maintain the existing aesthetic of the beach.
- Designs prioritize public safety and low-cost recreational user experiences.
- Designs should maximize public benefit.

Design Criteria Five: Regional

- Designs should provide a regional and statewide opportunity to pilot, test, and evaluate novel sand retention solutions.
- Designs should strive to positively impact the region both directly (i.e., by increasing sediment in the littoral cell) and indirectly (i.e., by providing knowledge beneficial to how to best design and implement retention strategies).
- Designs should be particularly sensitive to the potential for sand retention strategies to impact the flow of sediment through littoral systems and be designed to eliminate, minimize, or mitigate potential negative impacts to downdrift sand supply.

Project Assumptions:

- Pilot project designs will represent reasonable proof-of-concept sand retention strategies that can be piloted, scaled up, and/or repeated if appropriate.
- The objective is to create more time and space for the City to develop a comprehensive adaptation strategy for coastal resources.
- Project designs will assume that 300,000 cy of beach nourishment sand will be available initially within the project area and then for every five years for ongoing sediment management within the project area. The design teams can utilize this sand within their designs and propose various sand placement types within their concepts.
- Project designs will communicate uncertainty of their design's success.
- As pilots, project designs should be able to be adapted or removed if the project does not provide its intended multiple benefits over time.
- Project designs should be implementable, and should reflect an understanding of an ultimate need to be permitted and reviewed based on their adherence to existing laws, including the California Coastal Act. Throughout the competition, teams will be given guidance from experts to help ensure this outcome.

RE:BEACH

COMMUNITY INPUT SUMMARY



RE:BEACH

COMMUNITY INPUT SUMMARY

OVERVIEW

RE:BEACH is Oceanside's coastal resilience competition that brought together three design teams from all over the world: International Coastal Management (ICM) from Australia, Deltares and MVRDV based in the Netherlands, and SCAPE Landscape Architecture who have offices in New York and San Francisco alongside their California based partners, ESA and Dredge Research Collaborative. The teams herein will be referred to as ICM, Deltares and MVRDV, and SCAPE. The entire design competition lasted eight months and included three public workshops, on August 29, October 17 and December 13, 2023.

RE:BEACH is supported by a Jury, comprised of regional and local experts and regulatory agency members. The voting members of the Jury, with support from several non-voting members on the Advisory Panel, will ultimately select a winning design concept. Public input gathered through the RE:BEACH process has directly informed the design and the programming of the concept, bringing the project into alignment with the community of Oceanside's goals and desired uses of space.

THE SUMMARY

The Community Input Summary is an overview of the feedback provided by the public throughout the RE:BEACH process. Input was collected through three online surveys, corresponding with each public workshop. Every survey was open to the public for 30-days and results were provided to the Design Teams live, from the moment the online forms became available to the public through their closure. This enabled the Design Teams to stay up to date with public input and directly utilize it in their concept refinement. The survey questions were designed to help advance the Design Teams work and varied from one workshop to another.

The third and final workshop, on December 13, also included an audience question and answer session. The questions from the public are included in this summary, as supplemental to the online survey responses.

Learn more about RE:BEACH Visit www.REBEACH.org



watch design team presentations

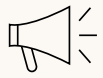


review design team slides and concept designs



provide feedback, by filling out online feedback form

Public Workshop Goals. The goal of each public workshop is to:



raise awareness about RE:BEACH



share design concepts with the community throughout the process



gain input, feedback and direction from the public

PROJECT GOALS & OBJECTIVES

The three design teams are each tasked with presenting a sand retention pilot project that is feasible and permissible in Oceanside. Teams were guided by a set of four problem statements and a robust list of design criteria, that together define the projects goals and objectives.



Read here:
Design Brief

The overarching goal of the RE:BEACH competition is to design and construct an innovative, multi-benefit, sand retention pilot project in the City that provides both local and regional benefits. More design competition guidance was provided to the teams and can be found in the Design Brief.

Problem Statements:

1. How might we design a sand retention pilot project that succeeds in the near (3 years) to short term (20-30 years) at retaining sand while simultaneously providing ecological and flood resilience benefits, limiting negative downdrift impacts and impacts to surfing resources, and it removable if necessary?
2. How might a sand retention pilot project open pathways for Oceanside to explore longer term coastal adaptation?
3. How might we successfully build and monitor a pilot sand retention project that informs future regional coastal adaptation approaches?
4. How might a pilot sand retention project be scaled to benefit a greater reach of the City shoreline?



DESIGN CRITERIA:**PHYSICAL**

- Designs should be in the coastal zone south of Oceanside Pier, focusing on the City's most highly eroded beaches.
- Designs should accommodate or be adaptive to up to 2-3 ft of sea level rise (that assumes 20-to-30-year design life), with minimal maintenance. The ability to accommodate or have adaptive capacity to greater amounts of sea level rise would be scored favorably.
- Identify a clear pathway for scaling of the pilot if it succeeds in its intention.
- Reference known design parameters from sand retention alternatives studied through the [Phase One report](#).
- Designs should be structured with the ability to perform sand retention and retain structural integrity under impacts from existing and projected future coastal conditions, including: (1) Extreme waves (100 yr. return interval – from northern and southern hemispheres), tides and winds (see companion documents, including Phase One report). (2) Extreme temperatures. (3) Public use, trampling & vandalism. (4) Performance goals of a particular design should be articulated. For example: (a) Retain a particular average annual beach width within a particular reach (b) Prevent overtopping beyond the beach at particular thresholds, such as 100-year total water level (TWL) and sea level rise scenario (5) For any performance goals, teams should define the anticipated time- scale during which the project would be able to perform as designed.
- Designs should include natural and nature-based features, where feasible, which may include onsite or imported materials, and/ or innovative materials designed for ocean compatibility.

FINANCIAL

- Construction estimates for the designs should be presented for initial construction costs, annual operation and maintenance costs, and removal costs. Creative use or reuse of materials is encouraged to lower costs.
- Designs should articulate the maintenance activities and cost for design to maintain key functions such as retaining sand, providing recreational benefits, and/or minimizing impacts to downdrift sand supply.
- Creative solutions to finance the project are encouraged that fully value the proposed project's range of

benefits (social, regional, economic, ecological). Especially if construction costs for designs exceed \$50M.

ENVIRONMENTAL

- Designs should encourage the rehabilitation of sandy beach habitat.
- Designs should minimize impacts to sandy beach ecosystems and nearshore marine ecology.
- Designs should be sensitive to where and which habitats may be converted as part of the design, what enhancements to ecology may occur, and where restoration of historic ecosystems may occur.
- All design references to ecological benefits should be qualified with detailed information on habitat classifications, quality, change over time, and uncertainties clearly explained.

SOCIAL

- A successful sand retention project should increase usable beach space supporting coastal access and multiple opportunities for recreation.
- Designs should prioritize preserving or enhancing surfing resources and minimizing impacts to existing surf resources.
- Designs should seek to increase or maintain the existing aesthetic of the beach.
- Designs prioritize public safety and low-cost recreational user experiences.
- Designs should maximize public benefit.

REGIONAL

- Designs should provide a regional and statewide opportunity to pilot, test, and evaluate novel sand retention solutions.
- Designs should strive to positively impact the region both directly (i.e., by increasing sediment in the littoral cell) and indirectly (i.e., by providing knowledge beneficial to how to best design and implement retention strategies).
- Designs should be particularly sensitive to the potential for sand retention strategies to impact the flow of sediment through littoral systems and be designed to eliminate, minimize, or mitigate potential negative impacts to downdrift sand supply.

PROJECT ASSUMPTIONS

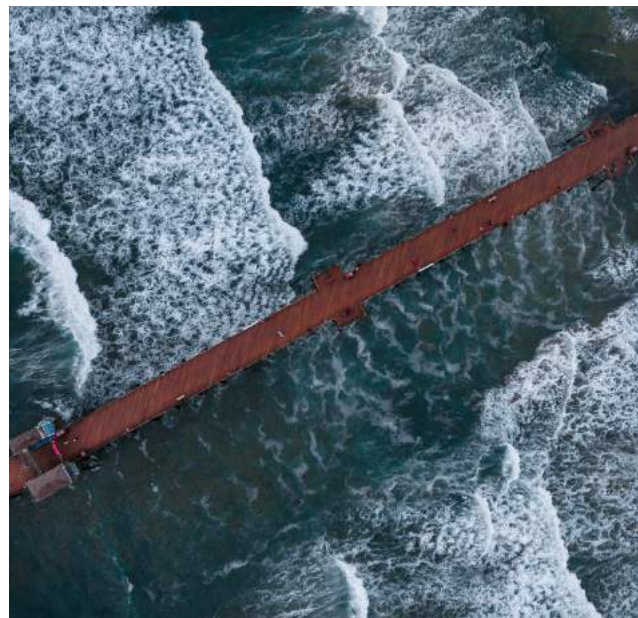
- Pilot project designs will represent reasonable proof-of-concept sand retention strategies that can be piloted, scaled up, and/or repeated if appropriate.
- The objective is to create more time and space for the City to develop a comprehensive adaptation strategy for coastal resources.
- Project designs will assume that 300,000 cy of beach nourishment sand will be available initially within the project area and then for every five years for ongoing sediment management within the project area. The design teams can utilize this sand within their designs and propose various sand placement types within their concepts.
- Project designs will communicate uncertainty of their design's success.
- As pilots, project designs should be able to be adapted or removed if the project does not provide its intended multiple benefits over time.
- Project designs should be implementable, and should reflect an understanding of an ultimate need to be permitted and reviewed based on their adherence to existing laws, including the California Coastal Act. Throughout the competition, teams will be given guidance from experts to help ensure this outcome.

PILOT PROJECT LOCATION

- The Design Teams may have indicated a conceptual location to help ground their concepts in Oceanside. However, these locations are not indicative of where the pilot will ultimately occur.
- The next phase of the project includes additional analysis, such as numerical modeling, to help determine the location that provides the most benefits to the broader coastline. This step also includes assessing the specifics of permitting, funding potential, and scalability of the selected concept.

RECOMMENDED PILOT PROJECT DESIGN

- The three public workshops built upon one another, each further developing and refining the Design Teams' concepts, incorporating the City Staff, Project Team, Jury, and public input. On December 14, 2023, the RE:BEACH Jury convened to deliberate, review and select a winning design team and concept. Public comments to-date were included in the Jury's deliberation. The RE:BEACH Jury unanimously recommended International Coastal Management (ICM), the team from Australia, to move forward into the next phase of work (final engineering, design and permitting).
- On January 31, 2024, Oceanside Staff will bring the recommended design and pre-identified modifications, to City Council in a workshop. The purpose of the workshop is to provide more space and time for the City Council to engage with and advise staff on the work.
- The comments gathered from the third workshop are being included in the final design recommendation, being presented at the City Council Workshop on January 31st, and are included herein.



KEY THEMES

Across the three public workshops conducted to-date, the following key themes emerged:

A Dry Sandy Beach: Overwhelmingly, respondents reported the desire to recreate on a wide, dry-sandy beach. Not only did we hear vivid memories and sentimentality for Oceanside’s beaches and surf breaks of the past, but also the desire to create coastal resilience for the future. There is a desire to offer future generations the opportunity to share similar experiences and create new memories—walk along the beach, watch the sunset, surf, play with their pets and dogs, and gather with friends and family. The ability to simply be at a beach, with sand, is a core theme heard across the competition.



Accessibility & Safety: Across all engagement, in-person comments and online feedback forms, respondents used the words ‘access’ and ‘safety’ as important components to any pilot solution. The term ‘access’ was used to refer to ease of enjoyment by elderly, children and the disabled, parking, and the ability to walk along the beach. Similarly, the term ‘safety’ was used to refer to mitigating risks, like rip currents, confidence of access the ocean, and feeling safe along and on any feature implemented through RE:BEACH. Amenities like clean bathrooms, ample parking, showers, educational and historical signage, playgrounds and recognition of native history were each mentioned as ways to improve accessibility and safety in a sand retention pilot project.



Healthy Coastal Ecosystems & Natural Elements: Through the design competition process, the public has been exposed to various amenities and programming that can be incorporated into a sand retention pilot project. In the juxtaposition between more nature-based elements and those that are more built, respondents asked for the inclusion of natural elements. Whether as a core component of the design feature or highlighting the ability to provide habitat



opportunities, Oceanside residents and regional attendees leaned towards more natural landscapes and spaces for recreating and enjoying a wider beach.

Surf Resources: Many respondents and attendees of both public workshops identified surf resources as core to Oceanside’s identity. While it is impossible to choose one form of recreating along the coast as core to Oceanside, there is little doubt, based on responses collected, that surfing and surf resources are critically important to the local and regional community. In each instance, feedback focused on the need to design strategies with surfing in mind, limit any negative impacts to surf resources, and seek alternatives that have the potential to enhance surfing amenities.



Space for Various Activities: Feedback indicated the desire for enough beach to provide space for a myriad of interests such as various sports, activities, hobbies, and a dog park.



Each of the RE:BEACH public workshops provides multiple ways for the community to engage.



In-Person

AUG 29, 2023 | OCT 17, 2023 | DEC 13, 2023



View playback online

Workshop 1 & Workshop 2 videos are available to view on the City of Oceanside’s YouTube channel and the RE:BEACH website (rebeach.org).



Submit digital feedback form

Workshop 1
August 29 to
September
30, 2023

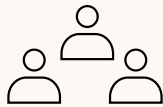
Workshop 2
October 17 to
November 30,
2023

Workshop 3
December 13
to January 13,
2024

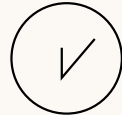


Review:
Team Slides

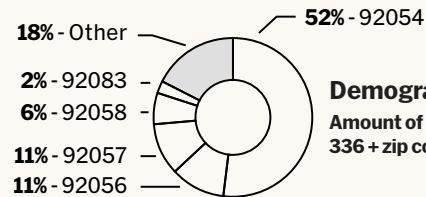
PUBLIC WORKSHOP ONE SUMMARY



Attendance
more than 200
attendees



Duration
4-7pm PT,
3 hours



Demographics

Amount of Responses:
336 + zip codes

The first public workshop was held on Tuesday, August 29, 2023 at the City of Oceanside, Council Chambers. Attendees had the opportunity to meet, speak with, and view posters from each of the three design teams in an open house format. Following the open house, the RE:BEACH project team presented the design competition process followed by three short presentations, by the design teams, about their initial ideas and concepts. The workshop was open to the public from 4–7pm PT. Video recordings of the presentations and slides are available on the City of Oceanside’s YouTube channel and the RE:BEACH website (rebeach.org). An online public feedback form was made available at the start of the workshop and remained open for 30-days. Design teams were given immediate access to results, so as to quickly and iteratively integrate input directly into their designs for the second public workshop.

The first public workshop was a moment to learn about, (1) the RE:BEACH process, (2) the design teams and (3) the early concepts each team was bringing forward for consideration.

Feedback questions from the first public workshop were focused on determining conceptual preferences and strengthening the design teams’ understanding of the community and people of Oceanside. Given the origins of the design teams, feedback from the first public workshop provided insight into the major characteristics of the City and broader community.

This summary is representative of all survey questions and responses from workshop one. All public feedback and input was reviewed and incorporated into the next round of design. Answers to long-form questions and open comment fields were condensed in this summary into broader themes that emerged. While not every question or answer is included, this summary represents the key themes across all feedback received.

Deltares + MVRDV

Deltares & MVRDV presented three distinct approaches: an artificial headland/peninsula feature, a recreation focused offshore breakwater, and a multi-purpose archipelago system. The community was presented with a spectrum of options for programming these concepts that could be refined based on the desired use and aesthetic.

SURVEY QUESTIONS

What are the strongest elements you wish to have incorporated into the final design?

- Sandy Beach
- Tidal Pools
- Backshore Vegetation

Which one of these descriptions represents Oceanside stability best for you?

75% - Oceanside beach as a place for human leisure, maximum space for activities, surfing, lifeguards, swimming and restaurants.

14% - Oceanside coast becomes a productive landscape, with areas that focus on food and energy production, restoring circular systems and re-imagining relationship to the coast.

11% - Oceanside beach as a restoration zone, maximum slopes for intertidal wetlands and pools, limited access for humans, submerged reefs and floating habitats.

COMMUNITY QUOTES

“The focus should be on multiple benefits - habitat restoration, human activity, tourism, water sports, education and address the evolving nature of the shoreline - seasonally and over the years. This option focuses too much on programmed elements - which could come later. But the top priority is stabilization, seasonal variation and long term stability. I want to know what the option determines the impacts are to the communities down shore and their sand retention.”

“Love how creative these ideas are. All concepts appeal to both humans and nature.”



SCAPE

SCAPE focused on leveraging natural materials such as cobble in different forms, dunes, and nearshore reefs. They framed each element as a part of a toolkit that can be integrated to fit the desires of Oceanside.

SURVEY QUESTIONS

In this initial phase, SCAPE gathered reactions to each of their designs. Their concepts included the redesign of a waterfront park with increased accessibility, called Dunepark. The SCAPE team also presented components of their concept using stabilized cobble features, called Cobble Crests, along existing beach materials, called a Cobble Spine. All three of their concepts scored similarly.

COMMUNITY QUOTES

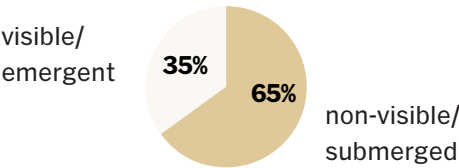
“I enjoyed the way team acknowledged that it is a changing coastline and the design would be flexible, have potential funding sources, and focused on sand retention. I would remind the team to keep Oceanside’s surfing identity when refining their design.”

ICM

ICM used their experience on Australia’s Gold Coast in their three-pronged approach of sediment supply, near-shore retention, and top of beach improvements. They presented two paths: a more natural looking concept with artificial headlands and an offshore reef, and a novel structure (such as a tombolo) being a more prominent feature added to the coast.

SURVEY QUESTIONS

Do you prefer a larger/emergent structure (visible offshore at lower tides) in the sea or a series of non-visible (below the surface) offshore structures?



COMMUNITY QUOTES

“... I liked the approach of starting small and seeing how it works”

General Survey Questions

Is there anything in particular you would like to see at upcoming Public Workshops that would help you contribute to the RE:BEACH competition process?

- Examples of where these types of ideas and concepts have been done on the West Coast.
- Timeline & cost analysis
- Potential siting and locations of pilot projects
- Understanding of how feasible the ideas presented are in construction, cost and timing
- Consideration for impacts to neighboring communities and coastal cities
- Amenities that include space for pets and dogs
- Protect existing and potential to enhance surf resources
- Include an understanding of sand bypass systems and persistent beach nourishment

Are there elements missing from the designs or concepts presented that you would like the teams to consider?

- Habitat restoration and impacts to natural ecosystems
- Impacts to neighboring cities

What three words best describe Oceanside’s coast to you?





Review:
Team Slides

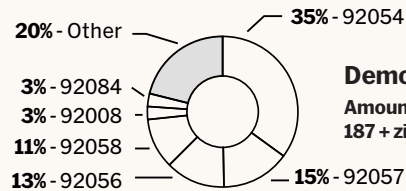
PUBLIC WORKSHOP TWO SUMMARY



Attendance
more than 220
attendees



Duration
4-7pm PT,
3 hours



Demographics
Amount of Responses:
187 + zip codes

The second public workshop, held on Tuesday, October 17, 2023, convened more than 220 members of the public at the Oceanside Museum of Art (OMA) for a round-robin format workshop. Each participant had the opportunity to rotate through all three-design teams' proposed pilot projects and hear from the project team on the monitoring and adaptive management components that would complement implementing a design as well as an overview of the latest science on sediment transport in the region. The workshop was open to the public from 4pm–7pm PT and culminated in a brief report out from representatives of each design team discussing what they heard from their interactions with the public that day. Following the workshop, pre-recorded presentations and slides by each design team, and the project team were made available on the City of Oceanside's YouTube Channel and on the RE:BEACH website. A public feedback form was accessible during the workshop through November 30, 2023, to collect input directly from participants and the broader community. The feedback form was focused around user experience and perceptions of each pilot project.

Each of the three-designs teams' concepts were considered for their amenities, design, and use. The purpose of these more tailored questions was to encourage the public to provide input on the user experience of each design, how it might impact their time spent on a beach and Oceanside's coast and provide tangible programming feedback to the Design Teams, City of Oceanside and Jury around perceived community benefits.

Similar to the first public workshop, this summary is a synopsis of all feedback of public responses received from Workshop 2 as of November 17, 2023. While not every question or answer is included, the major themes and topics are representative of the feedback.

Deltares + MVRDV

Community feedback helped focus Deltares & MVRDV’s approach on an artificial headland/peninsula. Using this one main feature, two concepts were presented that illustrated the opportunities to have more natural elements on the peninsula or to provide more visitor serving amenities programmed onto the structures.

SURVEY QUESTIONS

What elements in the Deltares & MVRDV designs do you want to see emphasized in a refined concept?

- Natural habitat restoration, including input from local biologists and experts, natural features like plants for shade along walkways, and inter-tidal habitat benefits
- Increased beach width, including sandy beach area
- Space for both people and dogs to access the ocean
- Safety and access, including safe swimming areas for elderly and children, and parking
- Emphasis on surf resources
- Sand, including a clearer understanding of how much sand will be retained, how wide of a beach will be achieved if successful and how the beach will interact with other natural features of the artificial headland

- Surf opportunities
- Visuals and descriptions of what the artificial headland will look like from the water’s edge
- Adaptability and maintenance of the concept, including long-term solutions to sand nourishment and bypass
- Scalability of the concept over time
- Understanding of potential impacts to adjacent beaches
- Demonstrate how the concept and its programming will increase accessibility, including parking
- The use of natural elements for play and education signs, native plant species to help educate the community about the coastal ecosystems in San Diego
- Adequate space for multiple uses including bikes, walking paths, dog use areas, and various sports

What elements are missing from the Deltares & MVRDV designs that you want to see added in a refined concept?

- More open space, including a greater emphasis on the beach

COMMUNITY QUOTES

“Please make this space intentionally beneficial for the environment. Plant butterfly habitats and native plants. Have educational signs that explain what is planted and why. Have the native people represented and honored.”

A coastal vision for Oceanside



SCAPE

SCAPE continued to pursue a layered approach that leveraged existing cobble resources and provided better details on ways the design could provide stabilization to the cobble crests and cusps. Additionally, SCAPE highlighted the opportunity to realign aspects of existing park and strand space to provide a more connected dunepark feature.

SURVEY QUESTIONS

What elements of the SCAPE design do you want to see emphasized in a refined concept?

- Consideration for impacts to ecology and surf resources
- Expectations around cobble crests sand retention and expansion of beach area
- Reference projects and sites demonstrating success of concept
- Better understanding of how the cobble will hold up against large surf and El Niño conditions
- Incorporating greater accessibility and safety for all beach goers, including elderly, children, bikers and pets
- More space for desired activities such as volleyball, jogging, dog park, etc

What elements are missing in the SCAPE design that you want to see added in a refined concept?

- Resilient and adaptivity to sea level rise

- Scalability to other parts of Oceanside, particularly more eroded areas in South Oceanside
- Understanding of how cobbles might move and shift over time
- Potential impacts to surf resources
- Anticipated sand retention and beach width
- Explanation of the experience users will have getting in and out of the water across and over a cobble spine
- Explanation of other potential amenities, including increased accessibility, parking, showers for surfers, and benches for sunset
- Overall cost and timeline for this concept

COMMUNITY QUOTES

“The design seems to have a decent balance between the natural and built environment. Often designers try to push as many amenities or “trophies” into a design as possible, but a beach should just be so: a beach. I appreciate the attempt to keep it as such. Please work with regional biologists to consult on the project.”



ICM

ICM incorporated the feedback from the first round of design by refining their concept towards a more natural looking submerged artificial reef with two headlands. This approach provides a ‘speed bump’ for sand allowing it to accumulate between the features and assist in restoring sandy beach area.

SURVEY QUESTIONS

What elements in the ICM design do you want to see emphasized in a refined concept?

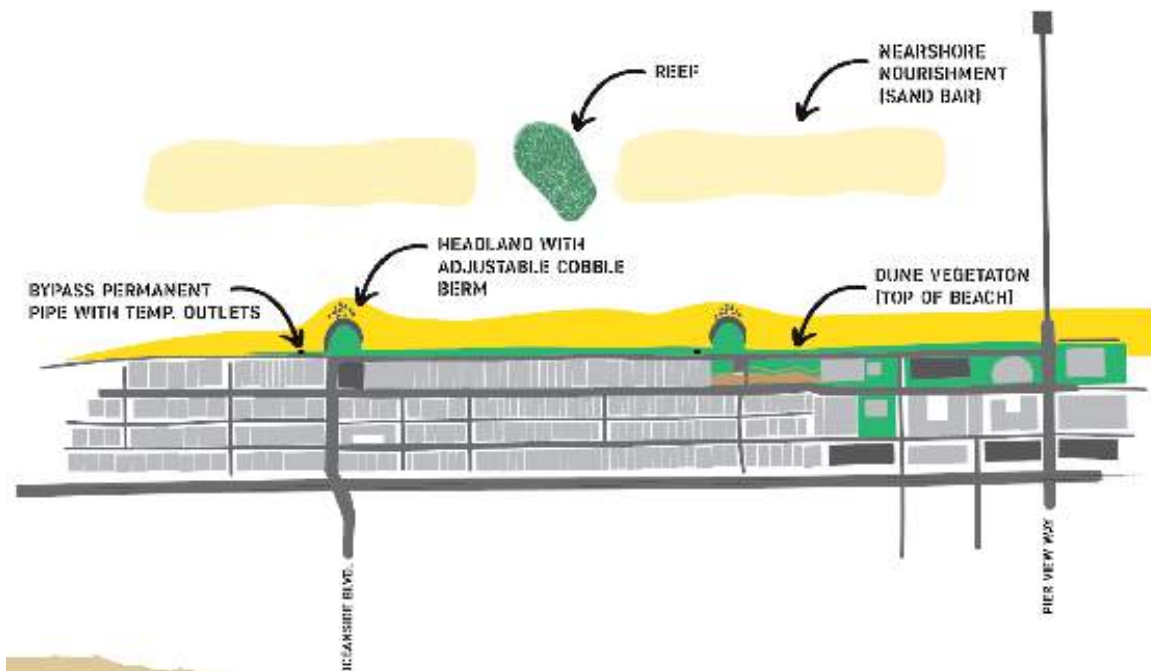
- Potential impacts to surf resources
- Better description of access improvements including parking
- Amount of beach width improvements and available space for recreational activities
- Reference projects and sites highlighting where this concept has been successful
- Explanation of how the pilot could be scaled throughout Oceanside
- Cost estimates of design and construction of pilot project
- Ecological benefits and amenities associated with this pilot concept
- Details on proposed materials and how they may create potential habitat
- Design strategies to mitigate any potential negative impacts

What elements are missing in the ICM design that you want to see addressed in a refined concept?

- Sand retention expectations with and without regular nourishment
- Impact of structures on beachgoers and surfers, including the potential for rip currents, swimming hazards, diving, fishing and surfing impacts
- Details on the shape of the artificial reef and how that intersects with sand retention and surf resources
- Articulation of recreational and ecological benefits of this design, including room to walk, space for dogs, and a park

COMMUNITY QUOTES

“Thank you for sharing proven solutions to Oceanside and to helping the community understand that there are concepts out in the world that are already working to retain sand on our shore for beach goers to use and enjoy for generations to come.”



General Survey Questions

Respondents were asked to select up to 3 beach amenities from a list of options that could be provided by the proposed design. The top 3 amenities desired by the public were the same across all teams, demonstrating a consistent desire from the Oceanside community. In no particular order, the top 3 responses are provided below.

- Beach Day
- Surfing
- Walking

Respondents were asked if there is anything in particular you would like to see at upcoming Public Workshops that would help you contribute to the RE:BEACH competition process?

- Financing, including cost comparison
- Overall project timeline
- Impacts, including on marine ecosystems
- Inclusivity, including diversity of representation and ease of hearing presentations / design teams
- Public Q+A with the Project Team
- Proof of concept
- Consistent replenishment of our beaches throughout the region, not just in Oceanside
- Hear from the Jury, including their deliberation around each concept and a chosen 'winner'
- Scalability of each concept

Respondents were asked what do you most look for with access to a wider, dry-sand, beach?

- Nature and ecosystems, including native plant species, clear paths for walking, and healthy habitats
- A wide beach, including space to spread out and lessen crowds, room to walk, and dry-sand
- Surf resources
- Safe spaces and access, including bathrooms with showers, parking, room to walk and recreate
- Recreation, including walking, sunbathing, playing in sand, and other beach activities
- Resilience and protection, including from impacts of sea level rise
- History, educational signage and interactive learning, including acknowledgment of native peoples



GENERAL QUOTES

“I mostly look for a place to lay down my beach gear for the day, that also has decent waves in front so I can enjoy a sandy spot to play with my kids and somewhere that I can paddle out and catch a few waves with my husband.”

“Beach access (sand) at existing beach access points. More sand means that I can walk to more waves or take a long beach walk. More sand on the beach likely means better sand bars for surfing.”

“An old fashioned day at the beach walking, swimming, surfing with access by car not too far away and free.”

“Sufficient trash bins, native plant species and educational signage, and native people being honored.”

“The ability to lay out on the beach and have a nice beach day. Also emphasis on some area where dogs can play off leash.”



Review:
Team Slides

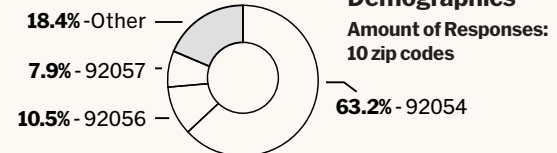
PUBLIC WORKSHOP THREE SUMMARY



Attendance
more than 150
attendees



Duration
4-7pm PT,
3 hours



The third public workshop was held on Wednesday, December 13, 2023 at the Junior Seau Beach Community Center. Attendees saw presentations from each of the three Design Teams, detailing their final pilot project concepts. Following team presentations, the public was able to ask questions to teams in the form of a live question and answer panel. The workshop was open to the public from 4–7pm PT. A video recording of the presentations and slides are available on the City of Oceanside’s YouTube channel and the RE:BEACH website (rebeach.org). An online public feedback form was made available at the start of the workshop and remained open for 30-days.

The final public workshop was an opportunity to (1) learn about each Design Teams’ proposed pilot project concepts, (2) ask questions directly to the Teams and (3) gain insight into the RE:BEACH process; including how Teams incorporated previous public comments into their designs.

The online feedback form for the final workshop was focused on what the public wanted to see in expanded on for each design in the next phase of the project. Additionally, the feedback form included questions on the RE:BEACH process overall, asking respondents to comment on ways they were or were not engaged with Oceanside’s Coastal Resilience Competition. The responses were made available to City Staff, who worked alongside RE:BEACH Jury to bring forward a single recommended pilot project, to City Council on January 31, 2023.

The summary below includes information from the in-person question and answer panel, as well as, the online feedback form.

DELTARES + MVRDV

The Dutch team’s “Green Dream Peninsula” design would pilot the use of a natural peninsula structure, constructed perpendicular from the existing coastline. A combination of existing materials and new boulders, this peninsula would extend out approximately 360 feet in length and 500 feet in descending width without obstructing ocean views. The boulders and other rocks would create a bulge in the shoreline to support sand retention while still allowing the flow of the creek. The space would create new space for increased recreation and opportunities for environmental enhancement.



SURVEY QUESTION

If Deltares & MVRDV’s design moves forward, what aspects would you like to see refined in the final engineering design and environmental review phase?

From all responses, the following themes emerged:

- The public articulated some concerns over safety of beach goers in the accessing ocean-facing, saltwater pools and sustaining water quality with an urban creek flowing out adjacent to the pool.
- The public had difficulty understanding the potential scalability of this concept, as headlands may need to take on different shapes at different locations to retain sand and the overall size seems marginal for the desired objective of maintaining a sandy beach.
- The public expressed concerns over the placement of the feature at Buccaneer Beach and the potential impacts to surf resources.

COMMUNITY QUOTES

“Love the headland design, but very large and too many design complexities that could be added after performance is verified. Simplify it! Why only one headland? Limits scope of beach restored.”

“Further consideration of water quality at the outlet. Love the integration of the natural and built environment here.”

SCAPE

The SCAPE Team's "Dunepark/Hybrid Beach" design proposed the construction of perched sandy beach fronted by a system of cobble features and boulders. The cobble berm would undulate with horns or crests that would extend seaward from the primary cobble berm. The design consists of 3 small cobble crests and 4 large cobble crests. The design also consists of 4 nearshore reefs placed seaward of the crest in the inter-tidal zone with the reefs being approximately 90ft long and 70ft wide. The shoreline concept could be combined with the repurposing of upland areas. DunePark is a concept that repurposes Tyson Street Park into a beach and dune area with various recreational amenities (restrooms, dog park, playground). This concept involves the landward realignment of the South Strand roadway.



SURVEY QUESTION

If SCAPE's design moves forward, what aspects would you like to see refined in the final engineering design and environmental review phase?

From all responses, the following themes emerged:

- Dunepark proposed to create a more usable and appropriate Tyson Street Park, but retreat of the Strand seems arduous.
- Overall, the public expressed a general concern around the Hybrid Beach concept feasibility and its ability to perform, as it had not been tested or tried in any other location.
- Cobble is challenging and difficult to walk on, making the usable beach space potentially less accessible.

COMMUNITY QUOTES

"My second favorite option. No examples of working in other areas, but theoretically makes sense. Looks like would be more limited in full scope for all of Oceanside beaches."

"Not interested in more cobble to combat beach loss. Seems like we will have continuous equipment redistributing cobble after every large tide or storm. Not proven. Like dune park, but that could be implemented by parks and recreation"

ICM

Taking their success on Australia’s Gold Coast, ICM’s “Living Speedbumps” approach proposes to construct one multi-purpose offshore reef (either of rock or geotextile bags) and two artificial headlands. The submerged, offshore reef could vary in size based on material selected and would be placed roughly 900’ offshore at a depth of approximately 40’. The artificial headlands would extend seaward 150’ and would be 150’ long across 1,700 linear feet of shoreline. The headlands and reefs would slow down wave dynamics allowing sand to gather between the features.



SURVEY QUESTION

If ICM’s design moves forward, what aspects would you like to see refined in the final engineering design and environmental review phase?

From all responses, the following themes emerged:

- The ICM Living Speed Bumps concept overwhelmingly received positive input for its professed ability to retain sand and provide other recreational benefits.
- ICM received an abundance of written comments from the public, stating their concept was their “favorite” or “best” option.
- The public viewed the potential to scale the ICM high, with a whole shoreline solution seemingly most feasible with this design.
- Recommendations included a need to consider influences of the reef and headlands on sand bar formation and function, and its influence on surf resources.

- There was suggestion that as the design progresses there should emphasis and consideration of how the structures they may impact the safety of surfers and swimmers.
- The public expressed a desire to see more natural design elements in the design of the headlands.

COMMUNITY QUOTES

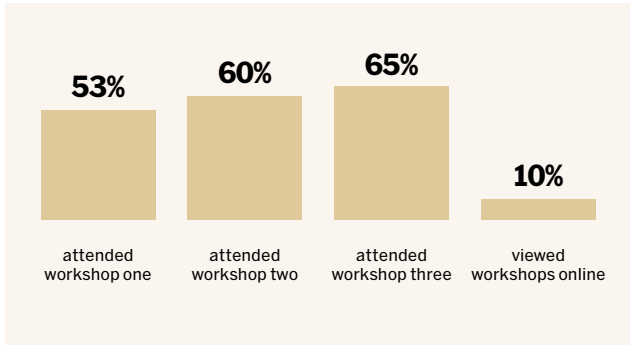
“Consider modifying the viewing platform design for a more natural look. I appreciate the close attention to surf potential and wide sandy beaches created for recreation under this design.”

“I think that their experience on the Gold Coast shows they have refined the approach that has been proven to work. I wish the sand bypass was still a part of. Maybe a future consideration.”

RE:BEACH Process & General Survey Questions

SURVEY QUESTIONS

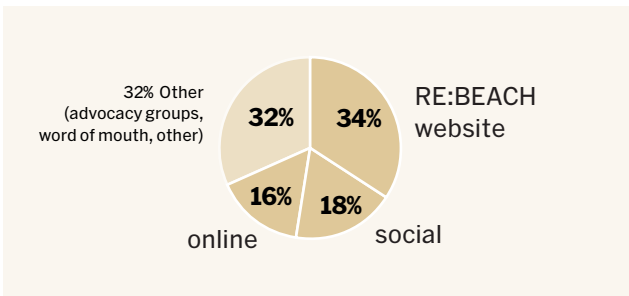
Which public workshop did you attend?
(select up to three)



Did you follow RE:BEACH virtually on www.rebeach.org?

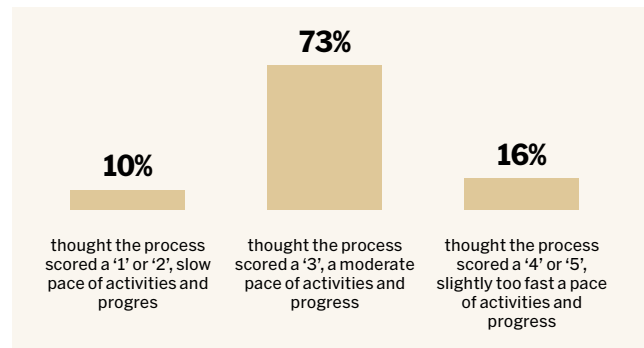


How did you get the majority of information about the RE:BEACH Oceanside effort?

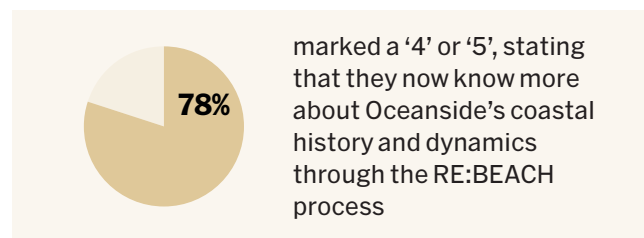


- The majority of respondents gained information online, through the RE:BEACH website, social media and generally online.
- However, there were many different types of responses that included ‘advocacy groups’, ‘Save Oceanside Sand’, and the ‘City of Oceanside’s Coastal Management Website’.

RE:BEACH was a 8-month long process, from selecting 3 Design Teams to determining one winning concept. While it was designed on purpose to be expedited based on the current condition of the Oceanside shoreline, we are seeking feedback on the length of this design competition. On a scale of 1 (too slow) to 5 (too fast) how would you rate Oceanside’s Coastal Resilience Competition?

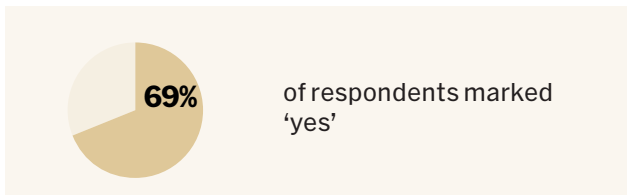


Through the RE:BEACH process, do you feel you know more (5), the same (3) or less (1) about Oceanside’s coastal history and dynamics?



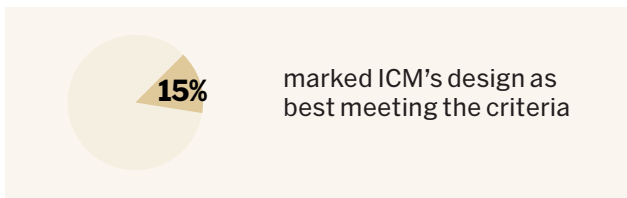
- 22% of respondents marked a ‘3’, for moderate learning through the RE:BEACH process
- No respondents marked a ‘1’ or ‘2’ to designate they did not learn something through the process

RE:BEACH aimed to prepare the City of Oceanside for adaptive coastal management of a pilot project for near-term resilience, while considering longer-term coastal management needs to ensure access to Oceanside’s beloved beaches well into the future. Keeping this in-mind, do you feel the pilot projects address near-term solutions while considering longer-term management needs.



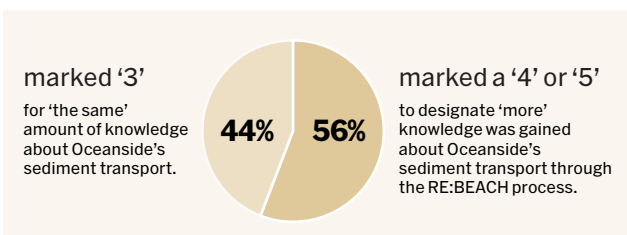
- 6% of respondents marked 'no'

If you feel one design in particular stands out as upholding this criteria, rate that proposed design.

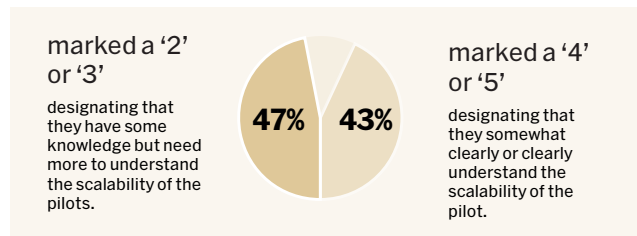


- 3% marked SCAPE’s design as best meeting the criteria
- 3% marked Deltares + MVRDV’s design as best meeting the criteria

Through the RE:BEACH process, do you feel you know more (5), the same (3) or less (1) about Oceanside’s sediment transport dynamics within the region?



The Design Teams demonstrate how each pilot might scale throughout Oceanside, how clearly do you understand the potential scalability of the pilot project?



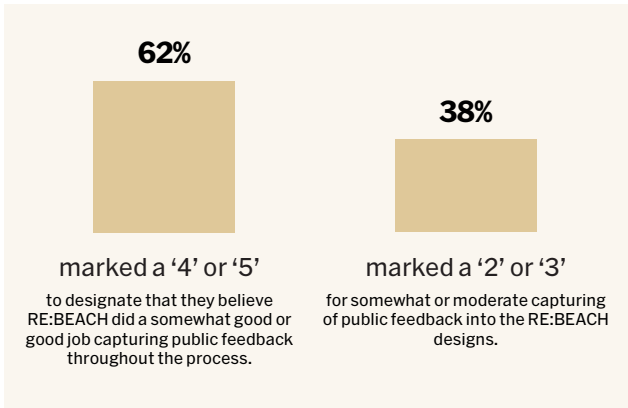
- This is the response we would anticipate given the status of each of the Teams’ designs and the work in the next phase to clearly define a site for the pilot and scalability.

When considering the three Design Team concepts, has RE:BEACH resulted in novel and innovative sand retention pilot projects for Oceanside?



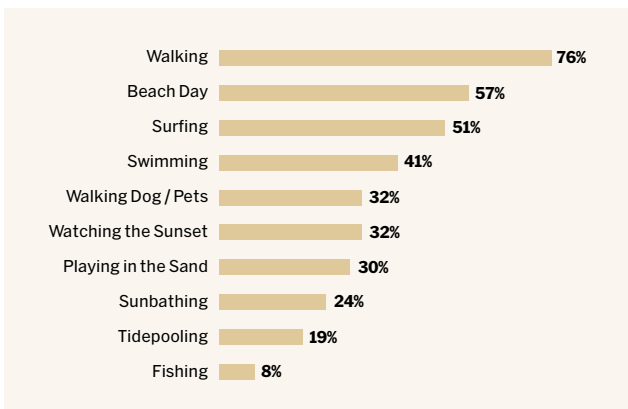
- Of the submitted responses, there was not a single respondent who marked 'no', rather several respondents marked with additional comments on the importance of innovation, novelty, and which team they preferred.

Each team was provided with opportunities to interact face-to-face with the public at workshops, all submitted public feedback, and had reviews with the City and Project Teams. How well did you feel teams incorporated public feedback into the updated designs?



- No participant marked a '1' or 'did not' capture public feedback.

We want your feedback to determine how you'll use the restored beach area. From the list of amenities below, which are most important to you? (select up to 3)
 Across all 3-surveys, we asked respondents to rank beach amenities most important to them. The results from the final survey are below and reflect what we have heard throughout the RE:BEACH Process.



Do you have any feedback for the City of Oceanside on the experience and overall process of RE:BEACH?

“Well done. Only issue not addressed was the source of funding and federal government commitment to resolve liability for harbor construction.”

“Great job working through this entire process! I know it was a lot and it moved fast. We are very excited for the next steps.”

“The City did an excellent job! I’m not sure how it could be done better. I hope that we can get the winning proposal permitted, funded and built!”

“Amazing process! Keep the communication open and flowing! Use the selected design to address our most devastated sections of beach...SOUTH!!!! Let’s go with the pilot and a plan for the entire Oceanside coast-line!!!”

“Great concept to have multiple teams submit their designs. ICM has the best proven concept. It will actually allow a sandy beach with a natural look.”

“Many thanks to Jayme! Also thanks to City Council members for helping to advance this crucial project and to keep the public engaged.”

RE:BEACH

Exhibit 1

Jury Deliberation Summary Report

12/14/2023, Mission Pacific Hotel, 8am - 5pm

Participants

Jurors:

- Chris Abad—Surf Resource Preservation—Director, Oceanside Boardriders Club.
- Bob Ashton—Community Representative & Coastal Advocate—President/CEO, Save Oceanside Sand (SOS).
- Scott Ashton—Community Representative—Chief Executive Officer, Oceanside Chamber of Commerce.
- Dr. Curt Busk—Community Representative & Coastal Advocate—President, Buena Vista Audubon.*
- Megan Cooper—Coastal Grant Funding Expert—Deputy Regional Manager, California State Coastal Conservancy.*
- Dr. Lesley Ewing PE—Coastal Management Expert—Former Sr. Coastal Engineer, California Coastal Commission.
- Karen Green—Nearshore Marine Expert—Division Manager, Marine and Aquatic Ecosystem Resources, Tierra Data, Inc.
- Councilmember Joy Lyndes—Coastal City Representative—Encinitas City Council.
- Dr. Dan Pondella—Nearshore Marine Expert —Professor, Biology; Director, Vantuna Research Group, Occidental College.
- Ernie Prieto III—Community Representative—Local Business Owner (Ocean Sea Charter), Boat Captain and sitting member of City of Oceanside’s Harbor and Beaches Committee.
- Mitch Silverstein—Coastal Advocate—Surfrider Foundation San Diego Chapter.*
- Councilmember Dwight Worden—Coastal City Representative—Del Mar City Council, Chair of SANDAG Shoreline Preservation Working Group.

Absent jurors:

Note: Charles Lester and Jeremy Smith, while they were unable to fully participate, provided written comments in advance as an input into the deliberation process.

- Dr. Arye Janoff—Coastal Management Expert—Coastal Geomorphologist, Planner & Manager with a U.S. Federal Agency.*
- Dr. Charles Lester—Permitting Viability Expert—Director, Ocean and Coastal Policy Center, Marine Science Institute, UC Santa Barbara.
- Jeremy Smith PE —Coastal Management Expert—Coastal Engineer, California Coastal Commission.*

Project Team members in attendance: Jayme Timberlake (City of Oceanside), Brian Leslie (GHD), Nick Sadrpour (GHD), Sam Carter (RCC), Alex Klein (RCC), and Maranda Ngue (RCC)

Design Teams (present only during their time slot):

Deltares/MVRDV: Fokke Moerel, Maria Stamati, and Kees Nederhoff

SCAPE and ESA: Gena Morgis, Pippa Brashear, and James Jackson

ICM: Aaron Salyer and Sam King

**indicates jurors whose role is advisory and non-voting, their ideas, input and role is purely their own expertise and does not represent the opinion of the various organizations they represent professionally.*

Description of process

The Jury for the RE:BEACH Oceanside Coastal Resilience Competition was selected by the City of Oceanside and announced in May, 2023. The Jury represents a range of expertise, from local and community leaders, downcoast regional neighbors, Non-Governmental Organizations, regulatory and funding agencies, and scientific experts. Throughout the three design rounds of the RE:BEACH competition, jurors were invited to participate in the Public Workshops, were regularly briefed by the Project Team on the designs as they evolved with public input, and provided review of public input—including input received during the final public workshop on December 13, 2023.

On December 13, 2023, Design Teams made their final presentations during the third Public Workshop at Junior Seau Beach Community Center in Oceanside. The following day, the Jury met to hear directly from the teams and deliberate about their proposed concepts to the City. At this meeting, the morning was dedicated to one-hour interviews with each of the three Design Teams. In these sessions, Teams were able to present conceptual and technical information about their designs, and respond directly to Jury members' questions. The afternoon was dedicated to discussion between the Jurors, with assistance from the Project Team, about each design. Teams were available to remotely answer questions that emerged from the discussions. Every Juror was asked to comment on each design, and to make any recommendations on how the designs might be adapted or improved. Following over two hours of discussion as a full jury, the voting members of the jury held their first vote. Jurors could cast one of three voting options for each team: "Support," "Support with reservations," or "Do Not Support." Jurors could also provide comments on their ballot. This voting mechanism allowed jurors to support more than one project, and it captured the nuance of their different perspectives. Following the first vote, jurors then continued to deliberate and ultimately arrived on a final recommendation with unanimous support.

The Jury serves as a third-party reviewer for the City of Oceanside to guide its decision-making. The Project Team (including GHD, Inc. and Resilient Cities Catalyst) prepared this summary report for the City as a follow up to the jury deliberations to 1) document the spirit of jury discussion, 2) detail the recommendations offered by the jury members on each of the designs, 3) portray the winning design team and concept and the justification for that selection, and 4) showcase the recommendations provided by the jury to the City on a path forward with the winning design concept.

On January 31, 2024, City staff will present the winning design for the Oceanside City Council to adopt, allowing 1 pilot project to move into engineering design and permitting. In addition to the Jury's recommendation, City staff will consider Project and City Team recommendations on how to implement the proposed design recommendations, as well as, public feedback on the designs, collected through mid-January.

RE:BEACH Jury Final Recommendation

The Jury unanimously supports with some modifications the International Coastal Management (ICM) concept design, "The Living Speedbumps." This proposal includes the construction of two artificial headlands, as well as, the construction of an artificial reef, roughly 130,000-250,000 square feet, the exact size of the reef will be determined in the next phase of final engineering and permitting offshore between the two newly constructed headlands (). The headlands were designed to mirror the size of the existing headland functionality of the base of the Oceanside Pier. This new coastal infrastructure would be supported by initial onshore and nearshore (i.e. placement on the sandbar) nourishment and ongoing annual maintenance.

The core rationale for selecting the ICM proposal was the concept's ability to meet the project goals and design criteria set forth in [the design brief](#). The overarching goal of RE:BEACH is to "construct

an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits." The ICM concept demonstrates a potential for positive impact in retaining sand. The ICM concept also demonstrates consideration for the five design criteria categories: Physical, Financial, Environmental, Social and Regional. Most notably, a clear consideration for potential neighboring-coast impacts (both North and South of Oceanside), the relevance of the ICM team's experience in the Gold Coast of Australia, the use of proven technologies in the design, the opportunity to design and deploy a reef with the intent to provide multiple benefits (e.g. ecological and recreational), and the leveraging of existing infrastructure to extend its effectiveness.

The two key modifications to the winning design proposed by the Jury are:

- Refinement of the design of the artificial headlands and a thoughtful proposal for programming on top of the headland. Several jurors requested the use of materials that better complemented the natural space and a headland design that better fits Oceanside's character. The finalization of the headland design needs to consider the opportunity for creating multiple-benefits. Walkability around the headlands at high tide may also be a concern during certain seasons or following large erosion (i.e. high wave) events.
- Strong consideration of the use of natural materials (i.e. quarry rock or another alternative to geotextile bags) for the artificial reef. Several jurors raised concerns and objections about the use of geotextile materials proposed by ICM for three reasons: increased maintenance cost to replace or repair geotextile bags, the introduction of non-natural and/or plastics into the water, and related public perception and permitting issues.
 - ICM responded to jury questions about the geotextile bag option, stating that the use of the geotextile bags versus rock allows the City to pilot the viability of an artificial reef to influence beach sand retention at a cheaper, up-front cost.
 - As the reef advances in design, the City should go further in exploring potential ecosystem and surf benefits that the reef could provide. The City should also be prepared to provide mitigation for habitat conversions (i.e. conversion from sandy subtidal habitat to artificial reef).

In addition, the Jury recommends that the City consider SCAPE's Dune Park concept separate from the RE:BEACH process. The Jury believed that a Dune Park could provide an improvement over the current Tyson St. Park space.

Overview of Juror Voting

- In the first round of voting, 100% of jurors did not support the SCAPE proposal for a "Hybrid Beach" (see comments below).
- However, there was consensus that the Dune Park concept should be considered as a project for the City, separate from RE:BEACH.
- After voting and discussion, 100% of voters either "supported" or "supported with reservations" both the ICM and Deltares/MVRDV proposals. However, a majority of jurors had significant reservations about the Deltares/MVRDV proposal, and a majority of jurors supported ICM without reservations.
- After further deliberation, jurors were asked to rank their preference for ICM and Deltares/MVRDV. ICM was the first choice of 6 jurors, while Deltares/MVRDV was the first choice of 3 jurors. The jury unanimously agreed that ICM was its recommended concept and team and outlined clear modifications to explore in the next phase of work.

RE:BEACH Jury Feedback on Designs

The following is a summary of the deliberations and discussions of the jury members at the meeting on December 14, 2023. While feedback is unattributed to specific jury members, all jurors had an opportunity to review this report for accuracy before delivery to the City.

ICM

- Unanimous support for implementation, with some modifications and reservations
- Overall, strong preference for a proposal that maximizes retained sand, usable beach, and is scaled appropriately for the current state of Oceanside's coastline
- Appreciated linking the local reference of the 'headland' at base of pier
- Scalability of the design was easy to understand and apply across Oceanside
- Rework design of headlands to entail a more natural integration along the coast, explore more nature-based strategies/materials, adjust the shape to mimic natural headlands found along the California coast, and fine tune expectations and approaches to backshore dune connectivity
- Confidence in the experience of ICM team and in their capacity to execute their proposal, with the success of the Gold Coast providing precedent. However, differences in wave climate between the Gold Coast and Oceanside raised potential concerns with suggestion for additional modeling to confirm design estimates relative to sand retention
- The creation of an artificial reef, focused on sand retention, provides an opportunity to pilot a new solution for California, which could be applicable to many communities
- Expectations around increased surf opportunities with the artificial reef need to be managed since improving surf resource is not a main objective of the artificial reef
- Project designed to slow, but not stop, sand movement through the littoral cell upcoast and downcoast gives recognition to regional needs
- Integrated onshore and offshore combination of elements designed to work together to restore natural conditions
- Post-construction modifications or adaptations to the reef will be difficult to implement so design options should be carefully modeled with this in mind

Deltares/MVRDV

- Unanimous support for implementation, with significant reservations
- Appreciation for nature-based connection to Loma Alta watershed and creation of aesthetic headland that mimics natural conditions. However, the design ultimately functions similar to traditional shore perpendicular coastal engineering structures
- Jury overall felt the performance estimated by the team was likely exaggerated and actual benefits of only one proposed peninsula would be too minor given the effort required to implement. Team could have proposed two peninsulas, as a part of a pilot program, to assist with meeting the scale of challenge that Oceanside currently faces, while still remaining within budget
- Concern about inlet stability and water quality if located at Loma Alta creek and refinement on hydrodynamics would be necessary to ensure proper flushing and connectivity
- Swimming tidal pool feature, while intriguing, was not supported by the Jury for cost/benefit and public health and safety concerns

- Uncertainty on where sand will accrete (north or south) of feature, and to what extent it will be able to retain sand, and a lack of confidence that sand retention will occur south of the feature
- Potential flanking impacts north or south of structure; there will be challenges with tying the structure into private revetment at base of feature

SCAPE

- Significant desire to see Dune Park component implemented through separate process, potentially led by City Parks and Recreation department
- Hybrid Beach concept was judged to be infeasible
- Uncertainty of sand accretion and structural integrity of system
- Likely would require more frequent and costly maintenance than anticipated by the team
- Was seen to provide the lowest potential for retention and accretion of sand
- Innovative and interesting design, and repurposing cobble could be beneficial for many locations, but ultimately as an untested solution using cobble stabilized by boulders was seen as too risky with too little potential positive impact, especially as a potential pilot at one of the City's most popular beaches
- Perception of adding cobble to shoreline can harm overall project objectives.
- Vertical access down cobble berm face and perched beach represents changed beach user experience (users are elevated above foreshore)
- Cobble sourcing and beach matching challenges
- Concern that the combination of cobble fingers and reefs could set up local rip currents

Overall Next Steps

- The winning concept is a major milestone for the overall project
- This selection of a winning design is part of a larger process that will continue to require active and transparent public participation amongst the local Oceanside community and greater San Diego coastal region. All opportunities pursued under RE:BEACH should leverage and intersect with ongoing efforts at the regional level, including potential inclusion as the pilot project identified as part of RBSP III that is currently in the early stages of planning
- With a concept selected, additional analysis on the ICM design, size/shape of reef and headlands, anticipated sediment transport mechanics, and integration of features with existing management practices is planned. GHD in concert with ICM shall work towards developing a robust monitoring and adaptive management program that identifies specific metrics and key strategies to reduce and mitigate any potential impacts.
- Further consideration for the location and site of the pilot is required to generate the greatest public benefit
- Mitigation will be required for any significant impacts to habitat and/or beach conditions.
- Transparency and public engagement, including neighboring cities, is important throughout the next steps.



RE:BEACH

OCEANSIDE, CALIFORNIA

PROJECT NARRATIVE
"Living Speed Bumps"
CONCEPT DESIGN | DECEMBER 2023

Item #1



International
Coastal
Management
EST. 1989 | QLD, AUSTRALIA

OCEANSIDE TODAY



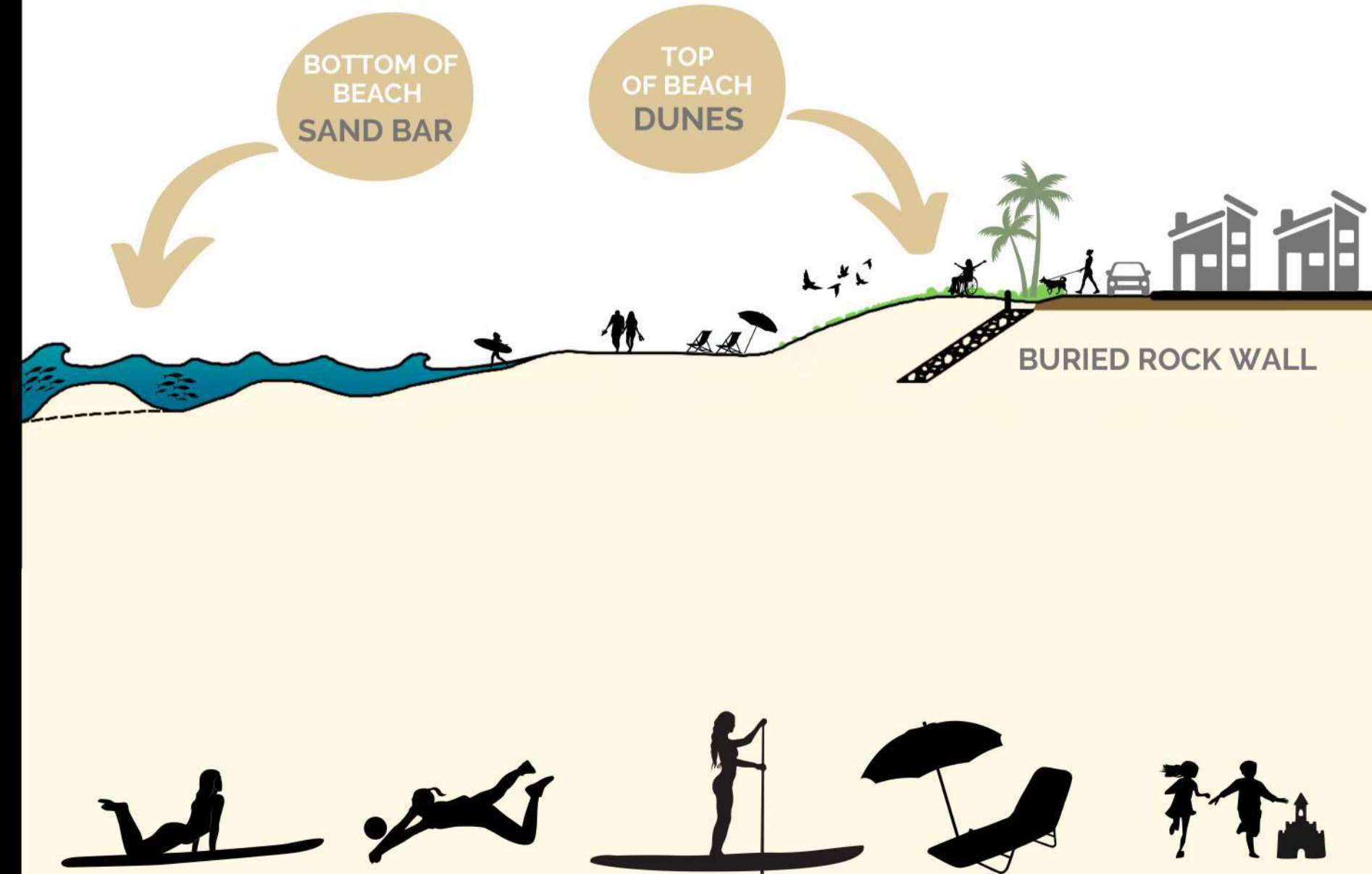
Leverage & build on ICM's RE BEACH experience. Customize for local conditions.



OCEANSIDE FUTURE

Exhibit 1

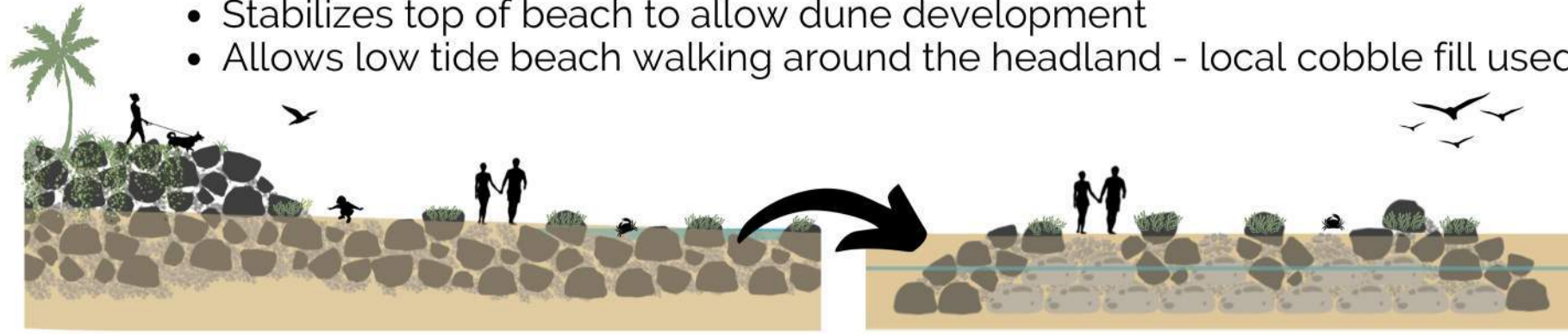
- ✓ Create a Healthy Beach Profile ("Living Shoreline")
- ✓ Retain & Manage a Living Shoreline (for an extended timeframe with living 'speed bumps')



PROPOSED 'SPEED BUMPS' (TOP & BOTTOM OF BEACH) SCHEMATIC CONCEPTS

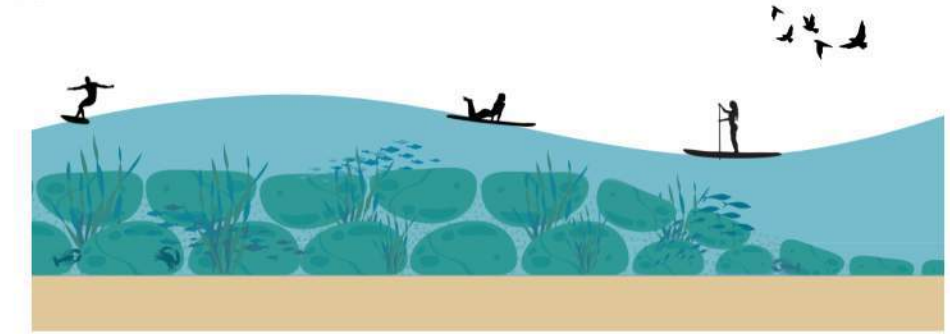
A Living Headland & Low Permeable Berm

- Based on existing pier headland scale & permeable extension into surf zone (piles)
- Stabilizes top of beach to allow dune development
- Allows low tide beach walking around the headland - local cobble fill used

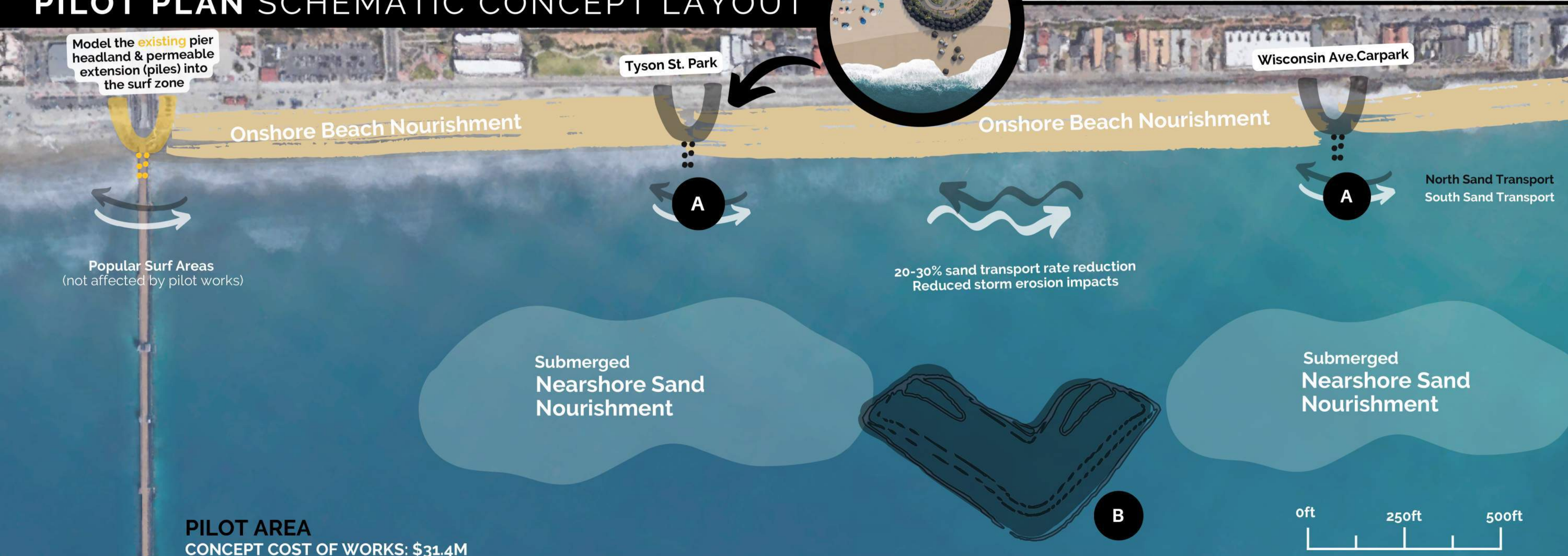


B Eco-Engineered Reef (Submerged)

- Based on proven Gold Coast examples (20 years+ in similar conditions)
- Improves sandbar retention & reduces beach erosion
- Ecological and surf benefits



PILOT PLAN SCHEMATIC CONCEPT LAYOUT



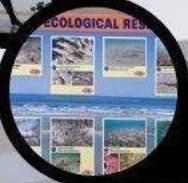
PILOT AREA
CONCEPT COST OF WORKS: \$31.4M

BEACH USABILITY

SCHEMATIC CONCEPT LAYOUT



Public park and seating around headland



Eco-education point & surf showers



Safe, sandy beach access



Increase surf potential

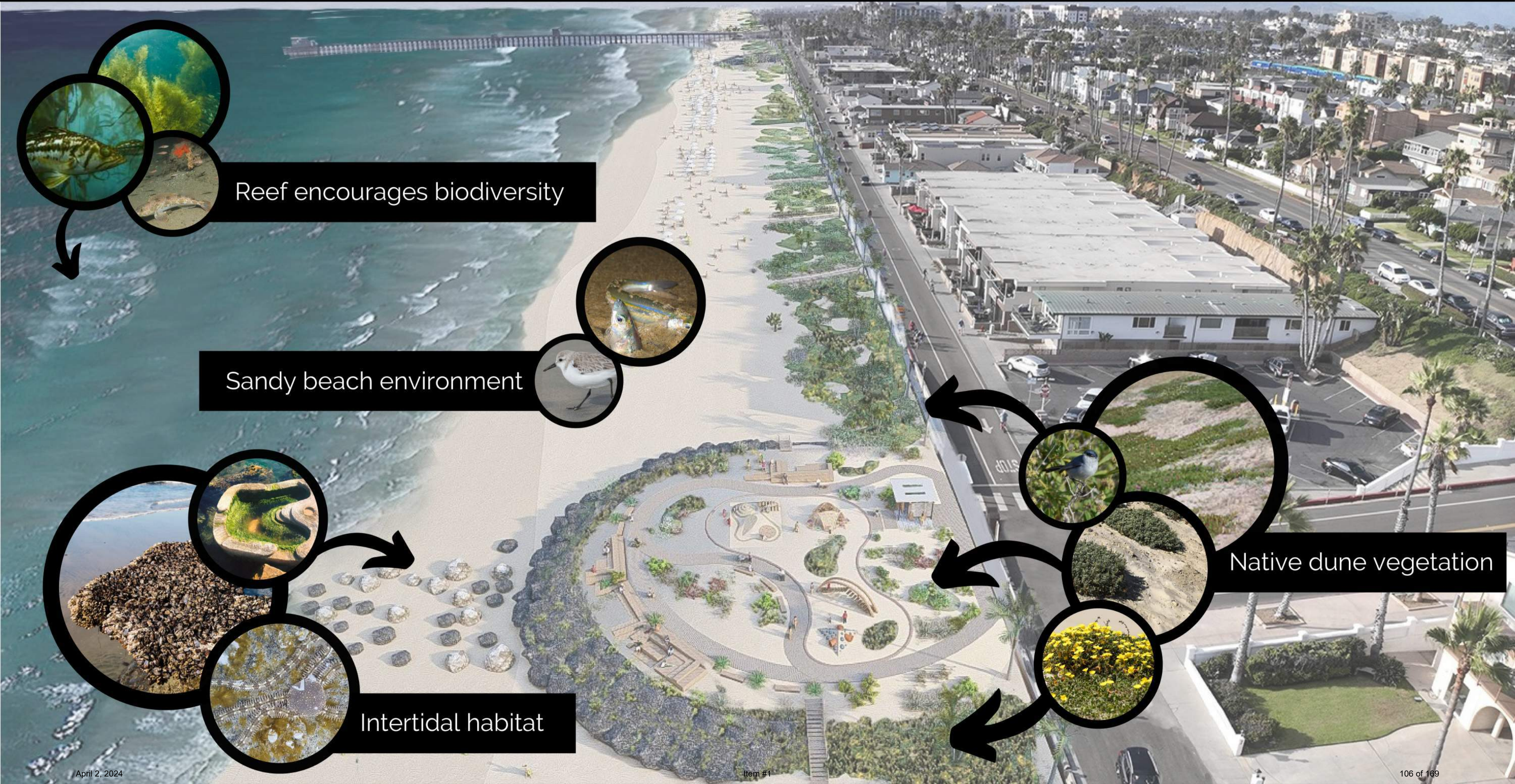


Contest viewing



Low tide walkway

ENVIRONMENTAL BENEFITS



Reef encourages biodiversity



Sandy beach environment



Intertidal habitat



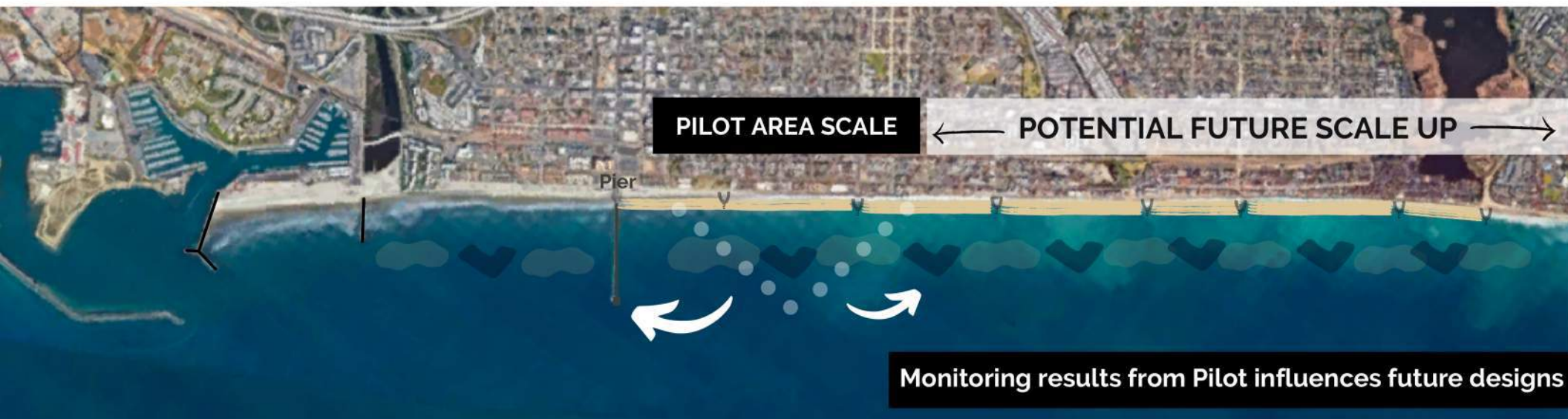
Native dune vegetation

"LIVING SPEED BUMPS" & COASTAL RESILIENCE

Slow down natural processes to retain sand longer. Not 'trap' sand.



OCEANSIDE 'REEF CITY'



Adaptability & Future Considerations



Top of beach - stabilize

- Headlands stabilize top of beach
- Allows dunes to develop
- Dunes retain sand for sea level rise buffer
- Headlands and dunes provide green corridors along beachfront for ecological stimulation

Bottom of beach - stabilize

- Reef stabilizes bottom of beach
- Helps to retain sandbars
- Sand bars and reef provide buffer from increasing sea level rise/climate change storms
- Reef increases offshore biodiversity (local and regional)

Improved sand retention across the whole beach profile ("living shoreline") is easily scalable



Keep building on decades of real-world, coastal resilience development for a greener, sandier Oceanside into the future



Carlsbad Shoreline Ownership/Control Map



	CA State Parks
	CA Lands Commission
	City of Carlsbad Controlled
	Private Ownership
	Beach Access





Carlsbad Shoreline Ownership/Control Map

Attachment Exhibit 1





Carlsbad Shoreline Ownership/Control Map



5039 Tierra del Oro
7/28/2014
OTD Lateral Easement
6-92-232
Weldon, Charles & Lou Ann
0210-0020-0016
7/25/2014
7/28/1993
Offer Accepted
City of Carlsbad

5039 Tierra del Oro
Deed Lateral Easement
F-7592
William Barlow,
0210-0020-0008
1/31/1979
Recorded

5099 Shore Dr
OTD Lateral Easement
6-86-278
Brown, Robert & Lillia
0210-0031-0800 2/15/1989
11/6/1986
City of Carlsbad
Offer Accepted

5319, 5323, 5327 Carlsbad Blvd
OTD - Lateral Easement
A-6-CI-10-043
Goetz, Dean
Carlsbad Blvd
0210-0120-0032,
0210-0120-0033,
0210-0120-0034
6/30/2000
Expiration: 6/30/2021

5327 Carlsbad Blvd
OTD Vertical Easement
A-6-CI-10-043
Goetz, Dean
0210-0120-0034
9/3/1997
9/3/1997
City of Carlsbad
Offer Accepted

- CA State Parks
- CA Lands Commission
- City of Carlsbad Controlled
- Private Ownership
- Beach Access





Carlsbad Shoreline Ownership/Control Map

Attachment Exhibit 1

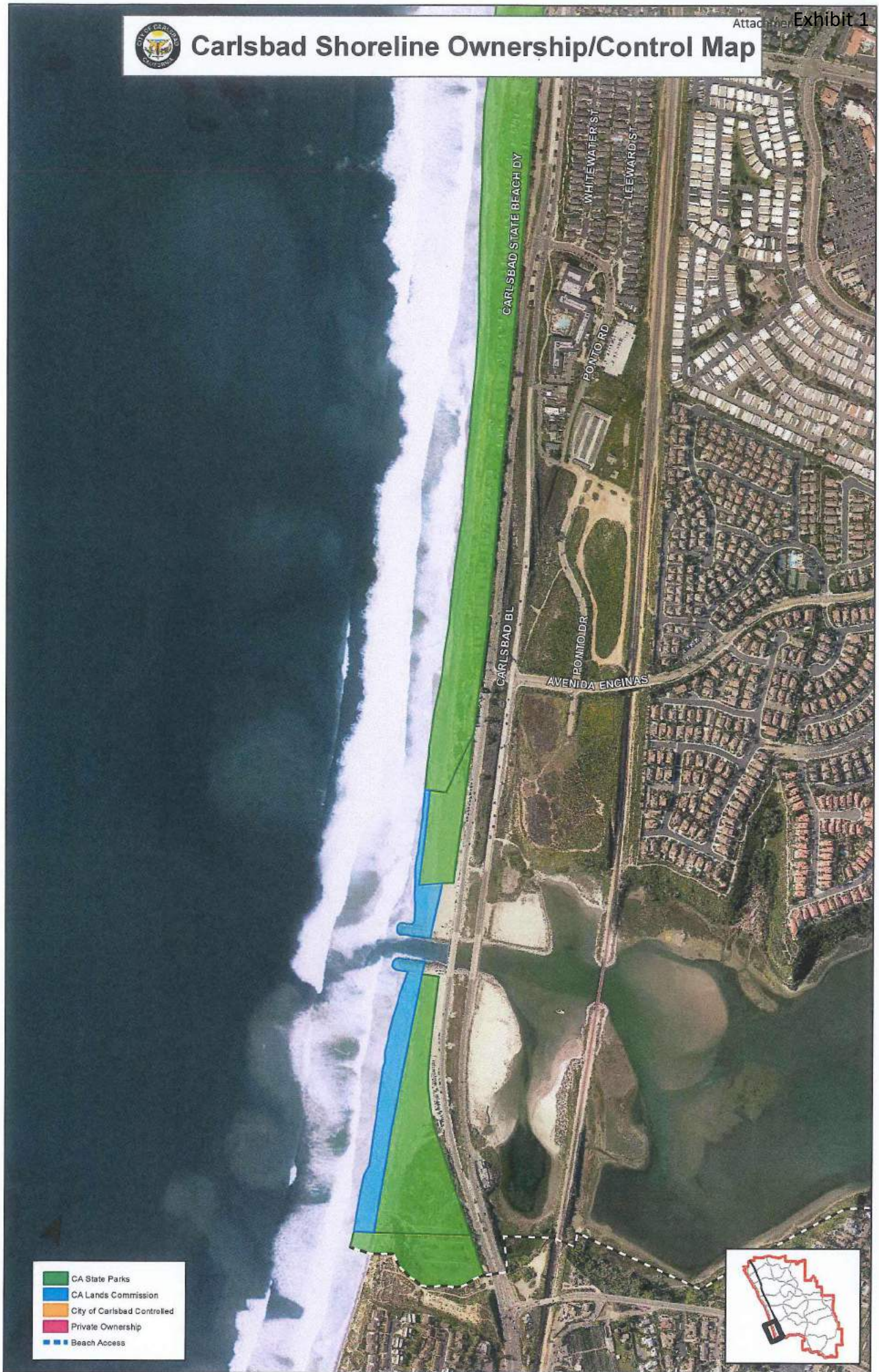
- CA State Parks
- CA Lands Commission
- City of Carlsbad Controlled
- Private Ownership
- Beach Access





Carlsbad Shoreline Ownership/Control Map

Attachment Exhibit 1



- CA State Parks
- CA Lands Commission
- City of Carlsbad Controlled
- Private Ownership
- Beach Access



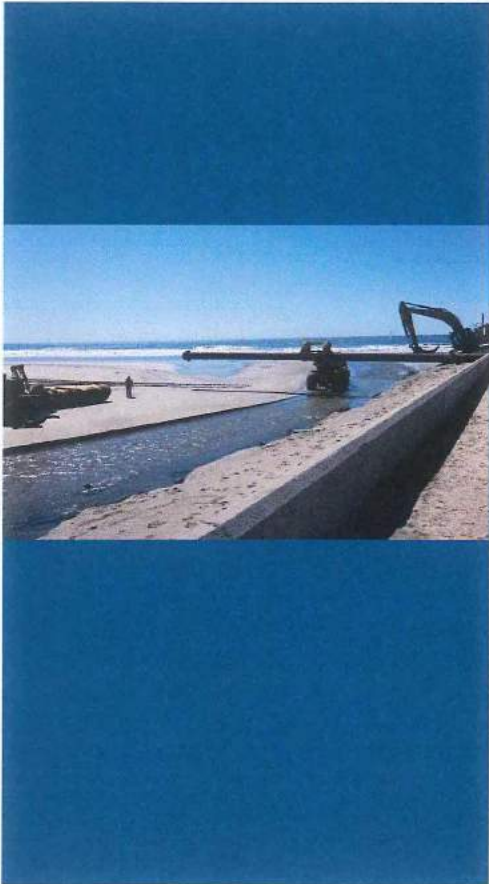
Attachment E

SAND REPLENISHMENT PLANS – January 2024

OCEANSIDE HARBOR

- Owned/managed by City of Oceanside
 - POC: Jayme Timberlake, Coastal Zone Administrator
 - jtimberlake@oceansideca.org, 760-435-3073

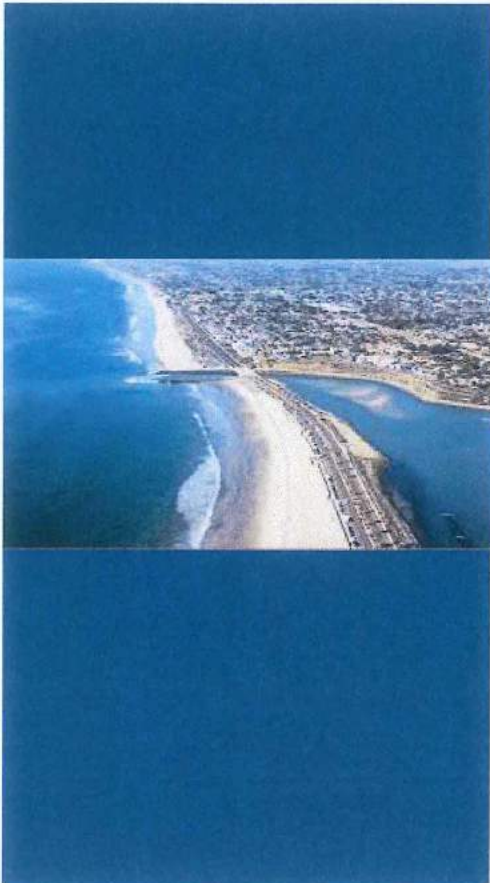
- Anticipated dredging schedule is as follows:
 - Mid-April to Mid-May 2024 (annually)
 - ❖ Previous project – April 2023



Attachment E

SAND REPLENISHMENT PLANS – January 2024

AGUA HEDIONDA LAGOON



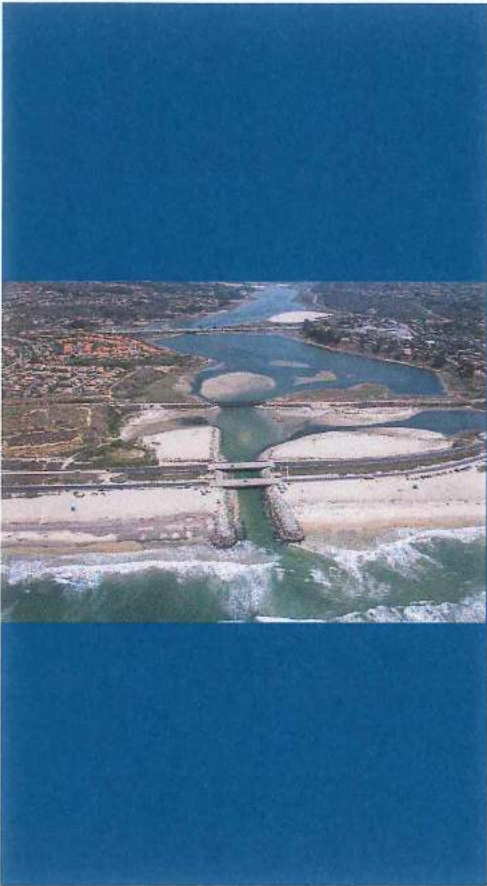
- Owned by NRG/Dredged by Poseidon Resources
 - POC: Michele Peters, Technical and Compliance Manager
 - mpowelson@poseidonwater.com, 702-606-8742
- Anticipated dredging schedule is as follows:
 - ❑ Fall 2024/Early Spring 2025 (based on field observations)
 - ❖ Previous Project – Winter 2021
 - ❖ 3-4 year cycle projection



Attachment E

SAND REPLENISHMENT PLANS – January 2024

BATIQUITOS LAGOON



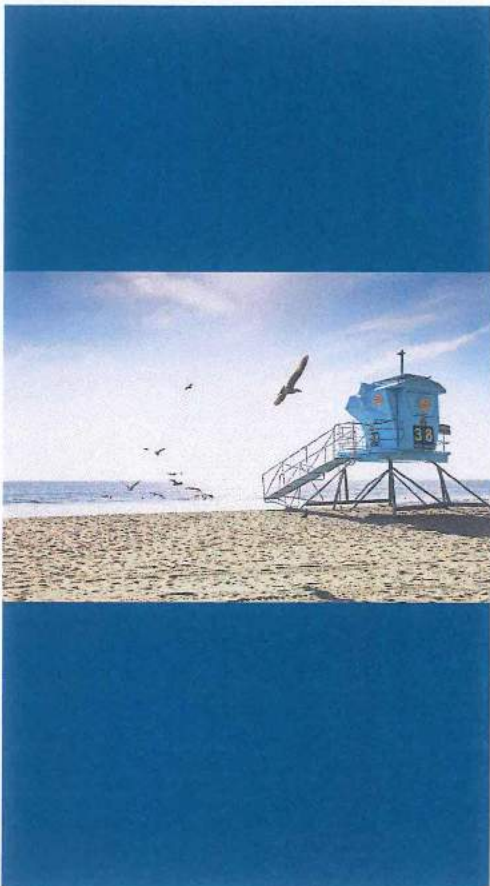
- Owned/managed by CA Dept. of Fish & Wildlife
 - POC: Gabriel Penaflo, Environmental Scientist
 - gabriel.penaflo@wildlife.ca.gov, 858-636-3160
- Anticipated dredging schedule is as follows:
 - Fall 2024/Early Spring 2025 (every 4-5 yrs.)
 - ❖ Previous project – Winter 2020



Attachment E

SAND REPLENISHMENT PLANS – January 2024

STATE BEACHES IN CARLSBAD



- Owned/managed by CA Dept. of Parks & Recreation
 - POC: Lisa Tomas, Acting Superintendent
 - lisa.tomas@parks.ca.gov, 760-720-7001
- Anticipated dredging permit issuance schedule is as follows:
 - Fall 2024 for Agua Hedionda Lagoon Project
 - Fall 2024 for Batiquitos Lagoon Project
 - Fall 2025 for Regional Beach Sand Project III
 - ❖ N/A for Oceanside Harbor Project





Attachment E

SAND REPLENISHMENT PLANS – January 2024

REGIONAL BEACH SAND PROJECT III

- Managed by SANDAG; 5–7 cities typ. participate
 - POC: Courtney Pesce, Associate Regional Planner
 - courtney.pesce@sandag.org, 619-699-6942

- Anticipated dredging schedule is as follows:
 - Funding - Fall 2023-25
 - Permitting - 2025/2026
 - Mobilizing – 2027
 - ❖ Previous Project - 2012





City of Oceanside
City Manager Department
Coastal Zone Management

Memorandum

Date: March 28, 2024
To: City of Carlsbad, Beach Preservation Commission
From: Jayme Timberlake, Coastal Zone Administrator, City of Oceanside
Subject: RE:BEACH Oceanside, Winning Design Concept

This memo regards the RE:BEACH Oceanside Project, which is the City of Oceanside's Coastal Resilience Design Competition that aims to build resiliency along the coastline of Oceanside south of their pier where chronic erosion persists. The Competition brought together three design teams from around the world to develop innovative sand retention pilot projects for the City of Oceanside.

Following the third and final Public Workshop for the RE:BEACH Project, a Jury/Advisory Panel comprised of a diverse group of coastal scientists, community leaders and regional representatives met to evaluate proposals from three international Design Team finalists. The RE:BEACH Jury expressed their unanimous support of a preferred alternative, International Coastal Management's "Living Speed Bumps" concept. The "Living Speed Bumps" concept includes the construction of two small headlands that will aim to stabilize sand on the back beach, with an offshore artificial reef aimed at slowing down nearshore erosive forces. ICM, based in Australia's Gold Coast, has decades of experience implementing "speed bumps" on their own coastline, bringing forward a new concept for Oceanside's coast, but with a proven track record of success on the East Coast of Australia.

On January 31, 2024, the Oceanside's City Council approved the winning design concept with a 5-0 vote, moving the project into the next phase, which is the final design, engineering and permitting phase of the project. The attached staff report (Attachment 1) from the January Council Workshop describes the project history, design competition process and winning design concept, which will be the subject of the City's presentation to the Beach Preservation Commission meeting on April 2, 2024.

Please let me know if there are any questions.

Respectfully,

Jayme Timberlake

ITEM NO. 1

Attachment 1

STAFF REPORT*CITY OF OCEANSIDE*

DATE: January 31, 2024
TO: Honorable Mayor and City Councilmembers
FROM: City Manager's Office
SUBJECT: **RE:BEACH OCEANSIDE WINNING DESIGN WORKSHOP**

SYNOPSIS

Staff recommends that the City Council take the following actions for the RE:BEACH Oceanside Coastal Resilience Competition:

1. Receive the conceptual alternatives and concur with the following staff recommended options:
 - a. Approve the staff and jury recommended selection of International Coastal Management as the winning design team, with its Living Speed Bumps concept
 - b. Approve the staff and jury recommended modifications to the selected design concept
2. Authorize staff to proceed with final design, engineering and environmental compliance tasks of the Phase 2 Sand Nourishment and Retention Pilot Project

BACKGROUND**Project History**

Since construction of the Camp Pendleton Boat Basin and City's Small Craft Harbor (Harbor Complex), over 21 million cubic yards (cy) of sand have been artificially placed on City beaches from either dredging activity to build the two harbors, the removal of sediment from the San Luis Rey River, the U.S. Army Corps of Engineers annual navigation dredging program or one-off, local or regional beach nourishment events. Despite all these efforts, coastal areas south of Harbor Beach (i.e., south of South Jetty) have been largely unable to sustain a dry sand beach for recreational, ecological and coastal storm damage protection purposes.

In 2020, the City conducted a year-long preliminary engineering evaluation and Feasibility Study to identify deficiencies in current coastal management actions as well as to determine a suite of solutions to lessen long-term beach erosion and mitigate the effects of the Harbor Complex. The Feasibility Study (Phase 1) concluded that 1) a high-quality source of sand, coupled with a beach nourishment program, should be

identified to provide more efficient and consistent beach nourishment opportunities, and 2) retention structure(s) are desirable as a means of retaining placed sand, since historical surveys and anecdotal data have shown that placed sand does not persist on most of Oceanside's beaches.

At an August 2021 public workshop, the City Council provided staff direction to pursue the recommendations given in Phase 1. Specifically, staff was directed to move forward with the environmental analysis, design, and permitting of a Phase 2 pilot project that would provide both beach nourishment and sand retention options. At that time, consideration was given to a pilot project that incorporated a series of groins. However, Council's direction also provided for flexibility when it came to determining the final design to be pursued.

In May 2022, the City hired its first full-time Coastal Zone Administrator who brought an enhanced level of technical expertise in support of the City's efforts while also providing an opportunity to further explore best practices in the area of coastal management.

On January 25, 2023, the City Council approved a contract with GHD Inc. (GHD) for the Phase 2 Sand Nourishment and Retention Pilot Project. The main tasks outlined in the Phase 2 scope included:

- Community and Stakeholder Engagement
- Baseline Monitoring Development
- Engineering, Analysis and Design
 - Preliminary Design through a Design Competition (RE:BEACH)
 - Final Design and Engineering
 - Plans and Specifications
- Environmental Compliance and Permitting

Since approval of the Phase 2 contract, development of a preliminary design for a sand retention concept has been underway through the execution of a public design competition, called RE:BEACH Oceanside Coastal Resilience Competition. The RE:BEACH competition process was developed by the Project Team, comprised of the City's Coastal Zone Administrator, GHD and Resilient Cities Catalyst, with ongoing support from a City Team comprised of City staff representatives from the Development Services, Public Works, Lifeguard and City Manager departments.

Design Criteria and Jury Selection

To guide the competing design teams through the competition and aid in the selection of a winning sand retention concept, a jury (Jury) was created early in the RE:BEACH process by the Project Team and City Team and announced in May 2023. To determine the suitability of concepts and to judge and inform the development of a sand retention design competition, community members and regional experts from distinct categories of coastal management were asked to submit an application to be part of the Jury. The composition of the Jury was intended to appropriately reflect the various interests in implementation of a project of this type and advise the City staff on a final

recommended pilot project. Jurors were also expected to be receptive to the concept of artificial sand retention as the City Council's prior direction was to pursue a sand replenishment and retention program. The distinct jury categories to be represented included the following: coastal management, Oceanside community representation, environmental compliance/permitting viability, surf resource preservation, nearshore marine resources, regional/coastal city representation, project funding, and state and federal regulatory agency representation. The Jury applicants were then reviewed and ranked by the Project and City Teams, and a list of voting and non-voting members was subsequently generated and confirmed. The Jury included Dr. Lesley Ewing, former Coastal Engineer for the California Coastal Commission, Bob Ashton, President/CEO of Save Oceanside Sand, Chris Abad, President of the Oceanside Boardrider's Club, officials from down coast cities, and Mitch Silverstein, San Diego Policy Coordinator for Surfrider Foundation. A comprehensive list of the Jury is available in Attachment 1 and 3.

Throughout the three design rounds of the RE:BEACH competition, jurors were invited to participate in the Public Workshops, were regularly briefed by the Project Team on the designs as they evolved with public input, and provided opportunities to discuss and review public input, including input received during the final public workshop on December 13, 2023.

The development of the Jury early on in the competition was intentional, as they were an integral part of creating the Design Criteria (Attachment 1) by which the design concepts would be guided and ultimately judged against. To guide the criteria development, RE:BEACH established a mission: to construct an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits, with all designs required to meet the bare minimum objectives:

- Align with the community character and history of place within the City of Oceanside
- Leverage previous analysis and feasibility studies completed to-date
- Maintain a forward-thinking design that incorporates adaptive capacity of solutions to future coastal conditions while addressing chronic erosion issues
- Be technically feasible, financially viable, and environmentally and socially acceptable

The Design Criteria were meant to fulfill two core objectives: (1) provide a boundary of the scope of design for the proposed solutions and (2) generate a set of objectives that Design Teams, and their solutions could be measured against.

With both the mission and objectives in mind, the Design Criteria addressed parameters involving physical performance, financial confines, environmental considerations, social implications and regional benefits and established the backbone of the initial design proposal solicitation.

Solicitation of Design Competitors

The Project Team invited a select number of firms to respond to the RE:BEACH proposal solicitation, based on a firms' past project experience and expertise. Due to the multi-faceted aspects of the Design Competition, firms were encouraged to form collaborative teams comprised of multiple firms that encompassed experienced professionals in a range of disciplines. Approximately 36 targeted firms were sent the solicitation, with 6 teams forming and ultimately proposing to be part of the competition. Using broad, consistent evaluation criteria, the submitted applications were narrowed down to three competing teams, based on experience, proposed approach and track record of delivering innovative solutions. The three selected Design Teams were:

- SCAPE Landscape Architecture with Environmental Science Associates (ESA) and the Dredge Research Collaborative. SCAPE is a New York City based landscape architecture and urban design firm with offices in New Orleans and San Francisco. The team works to create well-designed, ecologically restorative and socially engaged landscapes through diverse forms of design. ESA is an environmental consulting firm, specializing in design, permitting and implementation across the West Coast, bringing regional environmental science and engineering expertise to SCAPE's concept. Dredge Research Collaborative is an independent non-profit that provides leadership on sediment use and transport across the United States, and an in-depth understanding of sediment transport.
- Deltares with Deltares USA with MVRDV: Deltares is a nonprofit, solution-driven Dutch firm which boasts a robust knowledge of major societal issues and realizes the urgency behind finding equitable, sustainable solutions along coastlines. Deltares' mission revolves around working passionately to find answers to some of life's biggest environmental questions. MVRDV is a global architecture and urban design firm that focuses on contemporary issues, especially resilience, in regions across the world.
- International Coastal Management (ICM): ICM is an Australia-based firm that was founded in 1989. ICM's mission is to provide the best sustainable and innovative solutions in coastal engineering, while protecting and enhancing marine environments worldwide. From the Gold Coast in Australia to Europe and the Caribbean, the team of coastal engineers has experience with various technical coastal designs, having completed projects for SeaWorld, the Gold Coast Waterways Authority, the Nature Conservancy, and more.

Design Round Charettes and Public Workshops

Three Design Rounds or Charettes were planned between June to December 2023 to support the Design Teams in the development of their final sand retention concept. Design Teams participated in a Charette in the sixth week of each of the three Design Rounds where the Project Team, City Team and/or Jury provided feedback and comments on the progress made on pilot project concepts. Each Design Round

culminated with a presentation to the public at an in-person Public Workshop that was recorded with digital versions of the presentations available for subsequent viewing.

Charrette One was focused on an introduction to conceptual ideas and getting input from the City Team and Project Team on coastal processes and high-level visioning for Oceanside and the regions' coastal areas. At Charette Two, Design Teams were asked to share preliminary concepts and approaches, with ample opportunity for Design Teams to ask questions of the Project Team and gain insight on how to improve designs. At Charette Two, Design Teams also focused on how their concepts were successfully achieving the established Design Criteria. At Charrette Three, Design Teams were asked to enhance approaches and concepts, focusing on financial evaluations and technical refinement with input from the Project Team, City Team and Jury.

Each Public Workshop supported a similar program, with the Design Teams presenting their latest concepts and the public being given the opportunity at each workshop to provide direct comment and/or input via questionnaire to assist in refining the approaches. The Design Teams were required to develop figures, graphics, maps, and visual resources for use during each of the Public Workshops.

Public Workshop One aimed to gather broad community input on the Design Teams' initial design approaches, giving each team an opportunity to further gain perspective on community stakeholder goals and desires for the coast, and collect directional feedback to inform the designs going forward. Public Workshop Two depicted refined designs, with the technical aspects of sand retention more developed and elements visualized with opportunities for additional feedback. Public Workshop Three featured the final designs. The Design Teams were able to clearly show how stakeholder input shaped their designs, and why they arrived at their final solutions.

All Public Workshops were open to the public and were available virtually via a recording of the presentations with accompanying digital versions of materials. Each Public Workshop was heavily noticed via press releases, on the City's webpage, and on social media platforms, as well as via pop-up events. The workshops were very well-attended with approximately 150-220 persons participating at each workshop. Aggregated comments from all three Public Workshops are provided in the Community Input Summary (Attachment 2).

Given the regional interest and potential effect of the implemented project at various scales, the Project Team shared updates with regional stakeholders at each of the downcoast cities within the Oceanside Littoral Cell. Upon each jurisdictions' request, informational presentations summarizing the RE:BEACH competition, followed by a question and answer period, were made from October to December 2023 at the following cities:

- October 2023, Carlsbad Beach Preservation Commission
- November 2023, Del Mar City Council
- November 2023, Solana Beach City Council

- December 2023, Encinitas City Council

Additional local and regional outreach of the project occurred during the design competition:

- March 2023, Oceanside Coastal Neighborhood Association
- March 2023, Oceanside Chamber of Commerce
- May 2023, Smart Coast Cities Summit
- September 2023, SANDAG Sediment Management Technical Task Force
- October 2023, C7 Coastal Cities Meeting
- November 2023, Oceanside Chamber of Commerce
- November 2023, San Diego Regional Climate Collaborative
- November 2023, Headwaters to Ocean Conference
- December 2023, Oceanside High School

Prior to the initiation of RE:BEACH, leading up to the City Council decision to approve the Phase 2 contract, the following public outreach efforts were made:

- May 2022, Encinitas Environmental Commission
- June 2022, SANDAG Shoreline Preservation Working Group
- October 2022, Carlsbad Beach Preservation Commission
- October 2022, Save Oceanside Sand (SOS) Member Meeting
- November 2022, SANDAG Shoreline Preservation Working Group

Jury Deliberation

The Jury, comprised of voting and non-voting members, designated a winning design concept during the final Jury Deliberation held on December 14, 2023. The Jury utilized the distinct parameters outlined in the Design Criteria to evaluate the designs throughout the competition, leading to critical analysis of the designs at the final Jury Deliberation. This recommended winning design aligns with the City staffs' recommendation for a sand retention conceptual design that, upon City Council direction, can be moved into the final engineering and environmental compliance tasks under the approved Phase 2 Project contract. The Jury's collective comments and feedback assisted City staff in the development of recommendations to support the winning design. The winning design and associated Jury and City staff recommendations are described in detail in the Analysis section below. A detailed summary of the Jury Deliberation, including the Jury roster and their specific recommendations, is found in Attachment 3.

ANALYSIS

Staff and the jury recommend that the City Council approve the preferred alternative: International Coastal Management's "Living Speed Bumps" concept. The Living Speed Bumps concept proposes to construct one multi-purpose offshore artificial reef and two headlands, supported by nearshore and on beach nourishment, (Figure 1; Attachment 4), in a location that shall be determined in the next phase of the Project.

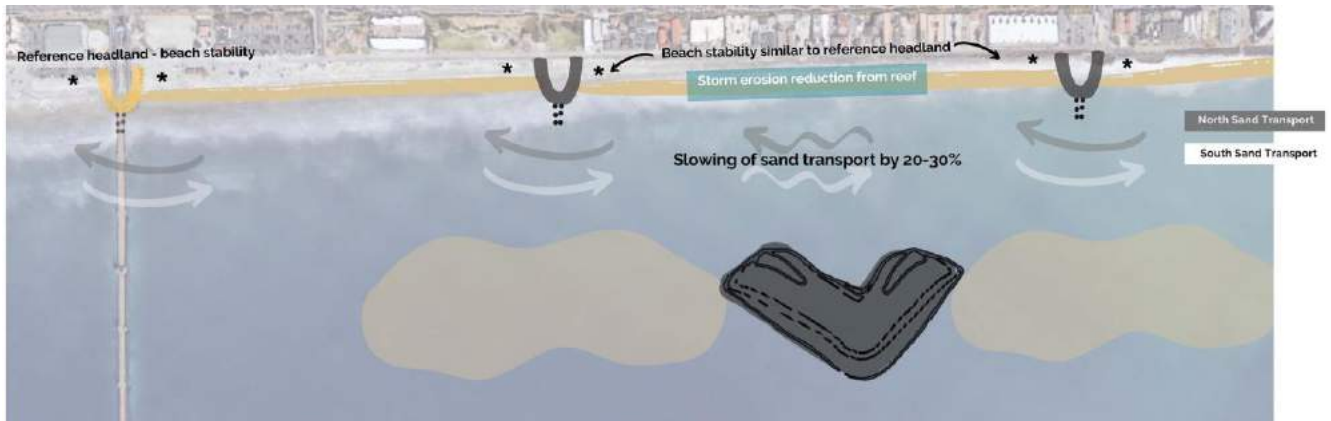


Figure 1. Conceptual diagram of Living Speed Bumps design (final location TBD)

The conceptual reef design that ICM developed included two options for reef materials (i.e., quarry rock or geotextile bags) and included two different reef shapes and sizes. These design elements were based on ICM's prior project experience on the Gold Coast of Australia. As proposed, the reef shall be placed at a depth of approximately 40', which is estimated to be 900' offshore. Two artificial headlands would be positioned on the shore both north and south of the reef. Conceptually, ICM suggested the headlands extend roughly 150' seaward and be 150' long. The headlands would consist of rock outcrops that would assist with beach stabilization, creating more opportunities for intertidal habitat, and mimicking natural and artificial headland formations in southern California.

The offshore reef's design intent would be to dissipate wave energy through wave breaking, which would in turn stabilize the beach in its lee (i.e., shoreward of the reef). The crest of the reef (i.e., how shallow the reef is) can be optimized to maintain longshore sediment transport around the reef. The reef would be designed to primarily stabilize the beach but improvements to surfing would also be a goal.

The diffraction of breaking waves by the reef utilizes wave energy to contribute to slowing the rate of longshore transport along the beach, and the formation of a salient to build beach volume, mimicking natural offshore reef structures local to the Californian coast. Similar natural reef structures that provide salient formed beaches include Crystal Cove, Aliso Creek and Salt Creek beaches in Orange County. The headland features would complement this salient formation and increase the performance of beach development.

It is important to note that the specific shape and size of both the reef and headlands will be determined in the next phase of engineering design where numerical modeling, leveraged from Phase 1, will be used to optimize the design to achieve the various project objectives. Other important design elements, such as a strategy for on beach and nearshore nourishment placement, will also be further developed in this phase. Back beach dunes will also be considered in the phasing plan for the project and can be deployed once the beach is stabilized.

Through the design competition, rough order of magnitude construction cost estimates were developed using standard material and labor rates to provide a consistent means to compare costs across Design Teams. These cost estimates are preliminary and will be refined in the next phase of design. A rough order of magnitude construction cost estimate of the Living Speed Bumps design is \$31-\$41M, depending on the specific shape and size of the features as well as the selection of the reef materials (i.e. sand filled geotextile bags or quarry rock). Annual maintenance costs of the beach sand and headlands were roughly estimated at \$500k.

Design Criteria Considerations

Overall, the winning ICM concept exceeds Design Criteria in many facets. The artificial reef, headlands and nearshore nourishment components allow for the continuation of natural coastal processes in Oceanside and beyond, as much as possible, while delivering on the retention of sandy beaches. Coupled with beach and nearshore nourishment, stabilization of the back beach is expected to begin within 3 years following completion of construction of the structural components. The need for ongoing maintenance is expected to be minimal once properly designed and constructed. Environmental conditions are expected to improve with construction, as beach habitat is expected to be restored and attract local and migratory shorebirds that once concentrated along the coastline. Socially, the concept adds safe access paths to the ocean through the headlands and increases park space and ocean viewing opportunities. Surf resources were a prioritized element in the design and will continue to be a focus as the design is refined. Regionally, the design supports the continuation of on-going longshore transport and natural coastal processes, maintaining natural function of the littoral cell and minimizing the potential for negative downdrift impacts.

Public Feedback

The ICM Living Speed Bumps concept overwhelmingly received positive input from the public for its professed ability to retain sand on the beach and provide other recreational benefits. ICM received an abundance of written comments from the public, stating their concept was their “favorite” or “best” option. Scalability potential was high with the ICM design according to public feedback, with application in additional areas of Oceanside’s coastline seemingly most feasible with this design. Similar to Jury feedback, recommendations from the public included a need to consider influences of the artificial reefs on sand bars to improve and/or maintain surf resources. Recommendations from the public also suggested that the design team conduct careful analysis of the structures placed and how they may impact the safety of surfers and swimmers. The public expressed a desire to see more natural elements in the design of the headland. A summary of public feedback provided throughout RE:BEACH is included in Attachment 2.

Suggested Modifications

The Jury provided valuable feedback and recommended modifications in its evaluation of the preferred design concept (Attachment 3). Notably, the Jury agreed that the ICM proposal seemed to be the most effective at beach stabilization, while taking into consideration local needs, such as adding naturalized park spaces in the headlands and preserving ecological and surf resources through their design. Additionally, the Jury recognized that the design had already been tested by ICM along similar coastlines in Australia, and therefore maintained confidence in the ability of ICM to deliver a successful pilot project with the greatest opportunity to be scaled up and applied in other areas of the Oceanside coastline once the success of the pilot project was proven to work locally.

The Jury and City staff recommend several key modifications to the design: (1) refinement of the headlands to use a more environmentally and/or aesthetically pleasing composition that blends better with natural coastal formations, (2) utilization of rock instead of geotextile bags for construction of the artificial nearshore reef, and (3) development a robust monitoring program that captures both ecosystem benefits and surf resource improvements/changes that the artificial reef may afford, which would be applicable to environmental permitting discussions with the resource/regulatory agencies.

- Refinement of the design of the artificial headlands and a thoughtful proposal for programming on top of the headlands. Several jurors requested the use of more natural materials and a headland design that better fits Oceanside's character. The finalization of the headland designs needs to consider the opportunity for creating multiple-benefits.
- Strong consideration of the use of natural materials (i.e. rock instead of geotextile bags) for the artificial reef. Most jurors raised concerns or objections to the geotextile materials proposed by ICM for three reasons: increased maintenance cost to replace or repair geotextile bags, the introduction of non-natural and/or plastics into the water, and related public perception and permitting issues. ICM responded to jury questions about the geotextile bag option, stating that the use of the geotextile bags versus rock allows the City to pilot the viability of an artificial reef to influence beach sand retention at a cheaper cost. Past projects in California that have relied on geotextile bags have experienced issues due to structural degradation with UV exposure and complications during removal that resulted in debris issues and logistical challenges. While material technologies have improved, and costs for using rock are much higher than geotextile bags, the Jury and Project team recommend going forward with a design that utilizes rock while still learning from ICM's experience with other materials.
- As the reef advances in design, the City should go further in exploring potential ecosystem and surf benefits that the reef could provide. The City should also be prepared to provide mitigation for habitat conversions (i.e. conversion from sandy subtidal habitat to rocky subtidal) that may be required by the Coastal Commission.

Design Competition – Non-preferred Alternative Concepts

Below is a description of the two non-preferred alternatives considered by the Jury for the RE:BEACH Oceanside Competition. A summary of all three design concepts is also available in the table below.

- SCAPE Landscape Architecture with ESA and the Dredge Research Collaborative
 - Dunepark/Hybrid Beach
As proposed, this team’s design could extend the existing 5-30 feet of usable beach area to 40-100 feet by elevating and retreating the Strand eastward and transforming an existing playground and lawn at Tyson St. Park into a dune area, called Dunepark. These on-land components would be supported by cobble crests in the intertidal zone and nearshore reefs in the subtidal zone, which proposed to encourage modest accretion of sand on the foreshore called the Hybrid Beach. A walking path through the dune area as well as dedicated sandy walking paths to the shore through the cobble crests was also proposed.
 - Jury Feedback
 - The Hybrid Beach concept was perceived to provide the least amount of sand retention and accretion, which brought into question the structural integrity and user experience of cobble-based design elements.
 - While the Hybrid Beach design was innovative and interesting, it was untested and had the potential to require more frequent and costly maintenance.
 - Dunepark was lauded as an exceptional concept that could be explored at a later date beyond RE:BEACH by the City of Oceanside, as an improvement to the existing shoreline park at Tyson St.
 - Public Feedback
 - Dunepark proposed to create a more usable and appropriate Tyson Street Park, but retreat of the Strand seems arduous.
 - Overall, the public expressed a general concern around the Hybrid Beach concept feasibility and ability to perform, as it had not been tested or tried in any other location.
 - Cobble is challenging and difficult to walk on, making the usable beach space potentially less accessible and the design less lauded by the public.
- Deltares with Deltares USA with MVRDV
 - Green Dream Peninsula
This Green Dream Peninsula would mimic a natural peninsula structure, constructed out from publicly-owned beach front spaces, utilizing existing rock and imported quarry rock. The designed peninsula would jut out approximately 360 feet in length from the back beach, and 500 feet in

descending width. The concept was proposed to occur westward from any publicly owned beach access area, but grounded at Buccaneer Beach where the design would extend Loma Alta Creek to facilitate creek flows out to the ocean. The Peninsula space would allow for increased recreation opportunities, improved beach access and environmental enhancement.

○ Jury Feedback

- While the nature-based design elements of this concept were highly regarded, including the proposed naturally shaped headland, there were several concerns identified by Jurors, which included uncertainty of sand accretion on north and south sides of the headland, concern over water quality if located at Loma Alta Creek, and potential flanking impacts north and south of the structure into private revetments.
- While innovative, the design was perceived to exaggerate the overall public benefit coming from only one proposed headland.

○ Public Feedback

- The public expressed concerns over the placement of the feature at Buccaneer Beach and the potential impacts to surf resources.
- The public had difficulty understanding the potential scalability of this concept, as headlands may need to take on different shapes at different location to retain sand and the overall size seems marginal for the desired objective of maintaining a sandy beach.
- The public articulated some concerns over safety of beach goers in the accessing ocean-facing salt water pools and sustaining water quality with an urban creek flowing out adjacent to the pool.

	SCAPE	Deltares + MVRDV	ICM (WINNING DESIGN)
Overview of Concept	Dunepark shifts the Strand inland, and reconfigures existing space into dunes which connect to the Hybrid Beach, a perched sandy beach atop a cobble berm comprised of existing and imported cobble stabilized by 3 small cobble crests (50ft x100ft), 4 large cobble crests (65ft x 130 ft) and 4 nearshore reefs (70ft x 90ft).	One peninsula/headland (500ft x 360 ft) comprised of rock allows for sand nourishment activities to be stabilized and help restore usable beach area on both the north and south side of the peninsula	One submerged offshore reef (made of either rock 330ft x 610ft or geotextile bags 490ft x 900ft) and two 'living headlands' (150ft x 150ft) made of rock, cobble, and sand that are designed to mimic natural processes can improve sand retention and beach resilience.
Reasonable expectations for the concept to restore sandy beaches	Initially creates 30-100ft wide sandy, stabilized perched beach with a cobble berm. Most of the new beach area comes from the construction of the Hybrid Beach with partial sandy beach from Dunepark.	Initially creates 50-100 ft wide sandy beach directly north of the peninsula. The effective beach width decreases to about 40 feet in the first 0.5 mile north of the peninsula. Sand nourishment and accretion would also be anticipated south of the peninsula.	Initially creates 100ft wide sandy beach, with a nominal 1:25 slope to seaward. Our 'speed bump' approach is targeting a slowing of longshore transport by about 20% to 30% of existing conditions.
Concept integration with sediment management activities	The concept may require replenishing sand atop portions of the perched beach and/or atop and between the cobble crests after storms. The concept could be completely covered with a larger beach nourishment along the shore.	The design can make regular beach nourishment activities more effective by slowing down transport. Specific sediment management placement patterns north and south of the structure would be developed once final design and modeling is completed.	The design can assist regular nourishment activities by slowing longshore transport to retain and stabilize a sandy beach, and support a strategy of more cost-effective nearshore nourishment protocol.
Options for concept to be adapted and modified should undesirable effects be observed	The cobble berm will use some similar sized rounded rock to existing material so much of it could be left in place. If the larger rocks placed on the crests and reefs are displaced or deemed problematic, they may be re-distributed, removed or repurposed into the backshore cobble berm.	The sand retention effect can be adapted by seaward extension of underwater portion of the tip of the peninsula. Depending on desired bypassing/connectivity this can be altered even after construction. Removal of parts of the peninsula is not likely required, although it can be done from the land.	The reef, whether comprised of sand-filled geotextile containers or boulder rock, can easily be adapted to improve performance outcomes, or removed if necessary. The porosity and crest height of the low-crested berm can be easily adapted to increase/decrease sand bypassing by removing/adding re-usable rock-bags or returning cobble fill to the beach.
Largest risk or uncertainty around concept	There is a high degree of certainty around the stability of the upland Dunepark portion of the proposal. The Hybrid Beach applies novel concepts that hold uncertainty around the level of sand accretion and level of structural integrity.	The performance of the concept will depend on the quality and volume of sand nourishment activities over time will be determined by the state of the beaches. Some uncertainty of rip current formation but not different than for other coastal interventions.	Confidence that concept will result in a significant degree of slowing of longshore transport. Uncertainty around the exact degree to which sand is slowed and retained at the beach. The expectation of a 'surfing reef' should be properly managed as the reef's primary objective is sand retention and storm protection.
Rough Order of Magnitude cost estimates	Project Construction Total: \$19.8M (Hybrid Beach: \$6.2 M and Dunepark: \$13.6 M) Annual Operation and Maintenance: Typical winter - \$100k Large storm (i.e. 20+ year event) - \$780k Removal Costs: \$2.9M	Project Construction Total: \$11.1M Annual Operation and Maintenance: \$1.8M Removal Costs: \$3.9M	Project Construction Total: \$31.4M (geotextile reef), \$40.6M (rock reef) Annual Operation and Maintenance: \$500k Removal Costs: \$4.7M

Next Steps

The RE:BEACH Oceanside Coastal Resilience Design Competition is the conceptual design component under the Engineering, Analysis and Design task of the Phase 2 Sand Nourishment and Retention Pilot Project. To reiterate, the main tasks outlined in the Phase 2 scope include:

- Community and Stakeholder Engagement
- Baseline Monitoring Program
- Engineering, Analysis and Design
- Environmental Compliance and Permitting

GHD will continue to serve as the prime consultant and will contract with ICM, the approved winning design team, to prepare final engineering plans, siting for the proposed concept and construction specifications. As the prime consultant, GHD is responsible for preparing major deliverables, coordinating the work of subconsultants, managing the project schedule and budget, providing project status updates, and working with City staff to ensure that all components of the project are consistent with and complementary to one another.

Community and Stakeholder Engagement occurred throughout RE:BEACH and shall continue to occur throughout Phase 2. Community engagement will take the form of formal and informal public meetings, social media posts and surveys, and informational pop-ups.

The Baseline Monitoring Program has been ongoing since the kickoff of Phase 1. Baseline assessments will continue in Phase 2, providing a robust dataset for the engineering analysis, siting and design tasks. Baseline assessments incorporate current surveys conducted by Scripps Institution of Oceanography and citizen science-led efforts by Save Oceanside Sand into a coastal database. Once a design concept is selected, further details on additional monitoring components can be compiled that reflect specific metrics to focus on.

The Engineering, Analysis and Design task incorporates the findings from the RE:BEACH process, including input from community and stakeholder engagements and the ongoing baseline monitoring program. This phase is also complemented by the investigation into a reliable sand nourishment source and development of a sampling and analysis plan and report. Additionally, siting of the proposed project will occur through this task.

Public and stakeholder comments submitted throughout the design competition highlighted the need for solutions for all of Oceanside's coastline, in particular South Oceanside. A siting analysis will be performed that objectively evaluates potential locations for the pilot project to aide in the City decision making process. This analysis will evaluate three (3) potential locations for the pilot project south of the Oceanside Pier, where erosion impacts are the greatest. Sites to be evaluated are anticipated to

include: 1) the South Strand (Seagaze to Wisconsin), 2) Wisconsin to Buccaneer Beach, and 3) a selected location between Buccaneer Beach and Buena Vista Lagoon.

The siting analysis will focus on factors related to the successful implementation and performance of the pilot project at achieving its established goals and objectives. The study will incorporate various factors related to successful implementation, which include the following factors:

- Public amenities – benefits afforded by the project should maximize public benefits.
- Coastal access – proximity of the project to public beach access locations and parking.
- Land ownership – opportunities or constraints posed by land ownership boundaries at each location.
- Lifeguard operations – opportunities or constraints to lifeguard services at each location based on feedback from City lifeguard staff.
- Biological resources – influence of project location on biological resources at Loma Alta Creek and Buena Vista Lagoon.
- Downcoast impacts – influence of project location on downcoast sediment supply.
- Sand management logistics – influence of project location on ability to manage sediment supply within and around the retention system.

A technical memorandum will be produced summarizing the findings of this siting analysis. The memo will also address how the pilot project could be scaled up or phased in the future to provide a broader benefit to the City's shoreline. It is assumed the findings from this analysis will be presented at one community or stakeholder meeting, likely occurring in summer 2024.

While the conceptual level design that ICM provided will be further developed to specify the shape and size of both the reef and headlands through numerical modeling, physical modeling the reef and headland components could provide insight on shape, size, and orientation design elements related to physical wave processes, such as wave breaking and rip current formation. Physically modeling a reef may also provide greater confidence in the design, as physical modeling could assist will calibrating and support numerical modeling efforts.

Deliverables from this Engineering, Analysis, and Design task include final plans and specifications that will be utilized in the final task of Phase 2, the Environmental Compliance and Permitting task.

The Environmental Compliance and Permitting tasks will entail the development of a combined Environmental Impact Report and Environmental Assessment (EIR/EA), addressing both CEQA and NEPA requirements as needed, as well as the development of permit application materials and permit acquisition from the following state and federal regulatory/resource agencies:

- California Coastal Commission
- Regional Water Quality Control Board
- U.S. Army Corps of Engineers
- California State Lands Commission

Ongoing Coastal Monitoring and Management

While it is recognized that RE:BEACH is a pilot project for a specific geographic location, the intent of the pilot is to determine the viability of the proposed novel sand retention concept for use in additional areas throughout Oceanside's coastline. A robust monitoring program, to be established under the Phase 2 Project contract, will inform our knowledge about the performance and scalability of the winning RE:BEACH design. As monitoring commences, continual attention to coastal erosion will be undertaken through the City's broader Coastal Management Program. Ongoing coastal management efforts that extend beyond RE:BEACH include, but are not limited to:

- Utilization of SCOUP permits and placement of opportunistic sand as suitable beach sand becomes available
- Development of dunes on the back beach in coastal areas where dry sand currently persists and that are subject to either sand management needs or intermittent flooding
- Participation in regional sand nourishment efforts through SANDAG
- Pursuit of funding and environmental compliance for execution of the Buena Vista Lagoon Enhancement Project

FISCAL IMPACT

Funding for the Phase 2 Sand Nourishment and Retention Pilot Project has already been allocated and is covered by the American Rescue Plan Act (ARPA) Sand Replenishment Account. Of the \$2.59M authorized for the Phase 2 Project, \$1.93M are left to accomplish the remaining tasks. The Sand Replenishment account 837134221271 currently has an available balance of \$706,300.

INSURANCE REQUIREMENTS

The City's standard insurance requirements will be met.

COMMISSION OR COMMITTEE REPORT

Does not apply.

CITY ATTORNEY'S ANALYSIS

City Attorney analysis does not apply at this stage. Any future contracts and discretionary entitlements will require review by the City Attorney.

RECOMMENDATION

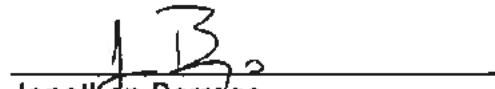
Staff recommends that the City Council take the following actions for the RE:BEACH Oceanside Coastal Resilience Competition:

1. Receive the conceptual alternatives and concur with the following staff recommended options:
 - a. Approve the staff and jury recommended selection of International Coastal Management as the winning design team, with its Living Speed Bumps concept
 - b. Approve the staff and jury recommended modifications to the selected design concept
2. Authorize staff to proceed with final design, engineering and environmental compliance tasks of the Phase 2 Sand Nourishment and Retention Pilot Project

PREPARED BY:


Jayme Timberlake
Coastal Zone Administrator

SUBMITTED BY:


Jonathan Borrego
City Manager

REVIEWED BY:

Hamid Bahadori, Public Works Director



ATTACHMENTS:

1. Design Criteria
2. Community Input Summary
3. Jury Deliberation Summary
4. Living Speedbumps Project Narrative

Design Criteria

The design criteria are meant to fulfill two core objectives: (1) provide a boundary of the scope of design for the proposed solution and (2) generate a set of goals that Design Teams, and their solutions can be measured against. To guide the criteria development, the Project is focused on a mission:

To construct an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits.

Any proposed solution should fulfill this mission, requiring all designs to meet the bare minimum objectives:

- Align with the community character and history of place within the City of Oceanside.
- Leverage previous analysis and feasibility studies completed to-date.
- Maintain a forward-thinking design that incorporates adaptive capacity of solutions to future coastal conditions while addressing chronic erosion issues.
- Be technically feasible, financially viable, and environmentally and socially acceptable.

With both the mission and objectives in mind, the design criteria are as follows:

Design Criteria One: Physical

- Designs should be in the coastal zone south of Oceanside Pier, focusing on the City's most highly eroded beaches.
- Designs should accommodate or be adaptive to up to 2-3 ft of sea level rise (that assumes 20-to-30-year design life), with minimal maintenance. The ability to accommodate or have adaptive capacity to greater amounts of sea level rise would be scored favorably.
- Identify a clear pathway for scaling of the pilot if it succeeds in its intention.
- Reference known design parameters from sand retention alternatives studied through the Phase One report .
- Designs should be structured with the ability to perform sand retention and retain structural integrity under impacts from existing and projected future coastal conditions, including:
 1. Extreme waves (100 yr. return interval – from northern and southern hemispheres), tides and winds (see companion documents, including Phase One report).
 2. Extreme temperatures.
 3. Public use, trampling & vandalism.
 4. Performance goals of a particular design should be articulated.
For example:
 - (a) Retain a particular average annual beach width within a particular reach
 - (b) Prevent overtopping beyond the beach at particular thresholds, such as 100-year total water level (TWL) and sea level rise scenario
 5. For any performance goals, teams should define the anticipated time-scale during which the project would be able to perform as designed.
- Designs should include natural and nature-based features, where feasible, which may

include onsite or imported materials, and/ or innovative materials designed for ocean compatibility.

Design Criteria Two: Financial

- Construction estimates for the designs should be presented for initial construction costs, annual operation and maintenance costs, and removal costs. Creative use or reuse of materials is encouraged to lower costs.
- Designs should articulate the maintenance activities and cost for design to maintain key functions such as retaining sand, providing recreational benefits, and/or minimizing impacts to downdrift sand supply.
- Creative solutions to finance the project are encouraged that fully value the proposed project's range of benefits (social, regional, economic, ecological). Especially if construction costs for designs exceed \$50M.

Design Criteria Three: Environmental

- Designs should encourage the rehabilitation of sandy beach habitat.
- Designs should minimize impacts to sandy beach ecosystems and nearshore marine ecology.
- Designs should be sensitive to where and which habitats may be converted as part of the design, what enhancements to ecology may occur, and where restoration of historic ecosystems may occur.
- All design references to ecological benefits should be qualified with detailed information on habitat classifications, quality, change over time, and uncertainties clearly explained.

Design Criteria Four: Social

- A successful sand retention project should increase usable beach space supporting coastal access and multiple opportunities for recreation.
- Designs should prioritize preserving or enhancing surfing resources and minimizing impacts to existing surf resources.
- Designs should seek to increase or maintain the existing aesthetic of the beach.
- Designs prioritize public safety and low-cost recreational user experiences.
- Designs should maximize public benefit.

Design Criteria Five: Regional

- Designs should provide a regional and statewide opportunity to pilot, test, and evaluate novel sand retention solutions.
- Designs should strive to positively impact the region both directly (i.e., by increasing sediment in the littoral cell) and indirectly (i.e., by providing knowledge beneficial to how to best design and implement retention strategies).
- Designs should be particularly sensitive to the potential for sand retention strategies to impact the flow of sediment through littoral systems and be designed to eliminate, minimize, or mitigate potential negative impacts to downdrift sand supply.

Project Assumptions:

- Pilot project designs will represent reasonable proof-of-concept sand retention strategies that can be piloted, scaled up, and/or repeated if appropriate.
- The objective is to create more time and space for the City to develop a comprehensive adaptation strategy for coastal resources.
- Project designs will assume that 300,000 cy of beach nourishment sand will be available initially within the project area and then for every five years for ongoing sediment management within the project area. The design teams can utilize this sand within their designs and propose various sand placement types within their concepts.
- Project designs will communicate uncertainty of their design's success.
- As pilots, project designs should be able to be adapted or removed if the project does not provide its intended multiple benefits over time.
- Project designs should be implementable, and should reflect an understanding of an ultimate need to be permitted and reviewed based on their adherence to existing laws, including the California Coastal Act. Throughout the competition, teams will be given guidance from experts to help ensure this outcome.

RE:BEACH

COMMUNITY INPUT SUMMARY



RE:BEACH

COMMUNITY INPUT SUMMARY

OVERVIEW

RE:BEACH is Oceanside's coastal resilience competition that brought together three design teams from all over the world: International Coastal Management (ICM) from Australia, Deltares and MVRDV based in the Netherlands, and SCAPE Landscape Architecture who have offices in New York and San Francisco alongside their California based partners, ESA and Dredge Research Collaborative. The teams herein will be referred to as ICM, Deltares and MVRDV, and SCAPE. The entire design competition lasted eight months and included three public workshops, on August 29, October 17 and December 13, 2023.

RE:BEACH is supported by a Jury, comprised of regional and local experts and regulatory agency members. The voting members of the Jury, with support from several non-voting members on the Advisory Panel, will ultimately select a winning design concept. Public input gathered through the RE:BEACH process has directly informed the design and the programming of the concept, bringing the project into alignment with the community of Oceanside's goals and desired uses of space.

THE SUMMARY

The Community Input Summary is an overview of the feedback provided by the public throughout the RE:BEACH process. Input was collected through three online surveys, corresponding with each public workshop. Every survey was open to the public for 30-days and results were provided to the Design Teams live, from the moment the online forms became available to the public through their closure. This enabled the Design Teams to stay up to date with public input and directly utilize it in their concept refinement. The survey questions were designed to help advance the Design Teams work and varied from one workshop to another.

The third and final workshop, on December 13, also included an audience question and answer session. The questions from the public are included in this summary, as supplemental to the online survey responses.

Learn more about RE:BEACH Visit www.REBEACH.org



watch design team presentations

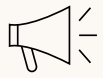


review design team slides and concept designs



provide feedback, by filling out online feedback form

Public Workshop Goals. The goal of each public workshop is to:



raise awareness about RE:BEACH



share design concepts with the community throughout the process



gain input, feedback and direction from the public

PROJECT GOALS & OBJECTIVES

The three design teams are each tasked with presenting a sand retention pilot project that is feasible and permissible in Oceanside. Teams were guided by a set of four problem statements and a robust list of design criteria, that together define the projects goals and objectives.



Read here:
Design Brief

The overarching goal of the RE:BEACH competition is to design and construct an innovative, multi-benefit, sand retention pilot project in the City that provides both local and regional benefits. More design competition guidance was provided to the teams and can be found in the Design Brief.

Problem Statements:

1. How might we design a sand retention pilot project that succeeds in the near (3 years) to short term (20-30 years) at retaining sand while simultaneously providing ecological and flood resilience benefits, limiting negative downdrift impacts and impacts to surfing resources, and it removable if necessary?
2. How might a sand retention pilot project open pathways for Oceanside to explore longer term coastal adaptation?
3. How might we successfully build and monitor a pilot sand retention project that informs future regional coastal adaptation approaches?
4. How might a pilot sand retention project be scaled to benefit a greater reach of the City shoreline?



DESIGN CRITERIA:

PHYSICAL

- Designs should be in the coastal zone south of Oceanside Pier, focusing on the City's most highly eroded beaches.
- Designs should accommodate or be adaptive to up to 2-3 ft of sea level rise (that assumes 20-to-30-year design life), with minimal maintenance. The ability to accommodate or have adaptive capacity to greater amounts of sea level rise would be scored favorably.
- Identify a clear pathway for scaling of the pilot if it succeeds in its intention.
- Reference known design parameters from sand retention alternatives studied through the [Phase One report](#).
- Designs should be structured with the ability to perform sand retention and retain structural integrity under impacts from existing and projected future coastal conditions, including: (1) Extreme waves (100 yr. return interval – from northern and southern hemispheres), tides and winds (see companion documents, including Phase One report). (2) Extreme temperatures. (3) Public use, trampling & vandalism. (4) Performance goals of a particular design should be articulated. For example: (a) Retain a particular average annual beach width within a particular reach (b) Prevent overtopping beyond the beach at particular thresholds, such as 100-year total water level (TWL) and sea level rise scenario (5) For any performance goals, teams should define the anticipated time- scale during which the project would be able to perform as designed.
- Designs should include natural and nature-based features, where feasible, which may include onsite or imported materials, and/ or innovative materials designed for ocean compatibility.

FINANCIAL

- Construction estimates for the designs should be presented for initial construction costs, annual operation and maintenance costs, and removal costs. Creative use or reuse of materials is encouraged to lower costs.
- Designs should articulate the maintenance activities and cost for design to maintain key functions such as retaining sand, providing recreational benefits, and/or minimizing impacts to downdrift sand supply.
- Creative solutions to finance the project are encouraged that fully value the proposed project's range of

benefits (social, regional, economic, ecological). Especially if construction costs for designs exceed \$50M.

ENVIRONMENTAL

- Designs should encourage the rehabilitation of sandy beach habitat.
- Designs should minimize impacts to sandy beach ecosystems and nearshore marine ecology.
- Designs should be sensitive to where and which habitats may be converted as part of the design, what enhancements to ecology may occur, and where restoration of historic ecosystems may occur.
- All design references to ecological benefits should be qualified with detailed information on habitat classifications, quality, change over time, and uncertainties clearly explained.

SOCIAL

- A successful sand retention project should increase usable beach space supporting coastal access and multiple opportunities for recreation.
- Designs should prioritize preserving or enhancing surfing resources and minimizing impacts to existing surf resources.
- Designs should seek to increase or maintain the existing aesthetic of the beach.
- Designs prioritize public safety and low-cost recreational user experiences.
- Designs should maximize public benefit.

REGIONAL

- Designs should provide a regional and statewide opportunity to pilot, test, and evaluate novel sand retention solutions.
- Designs should strive to positively impact the region both directly (i.e., by increasing sediment in the littoral cell) and indirectly (i.e., by providing knowledge beneficial to how to best design and implement retention strategies).
- Designs should be particularly sensitive to the potential for sand retention strategies to impact the flow of sediment through littoral systems and be designed to eliminate, minimize, or mitigate potential negative impacts to downdrift sand supply.

PROJECT ASSUMPTIONS

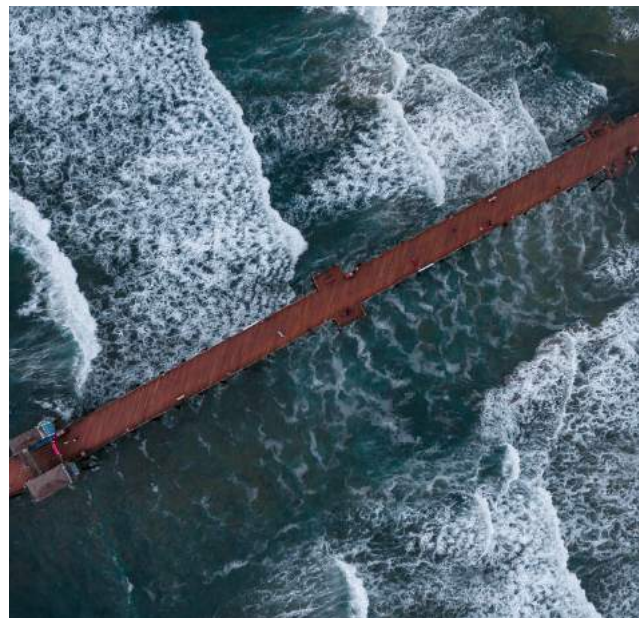
- Pilot project designs will represent reasonable proof-of-concept sand retention strategies that can be piloted, scaled up, and/or repeated if appropriate.
- The objective is to create more time and space for the City to develop a comprehensive adaptation strategy for coastal resources.
- Project designs will assume that 300,000 cy of beach nourishment sand will be available initially within the project area and then for every five years for ongoing sediment management within the project area. The design teams can utilize this sand within their designs and propose various sand placement types within their concepts.
- Project designs will communicate uncertainty of their design's success.
- As pilots, project designs should be able to be adapted or removed if the project does not provide its intended multiple benefits over time.
- Project designs should be implementable, and should reflect an understanding of an ultimate need to be permitted and reviewed based on their adherence to existing laws, including the California Coastal Act. Throughout the competition, teams will be given guidance from experts to help ensure this outcome.

PILOT PROJECT LOCATION

- The Design Teams may have indicated a conceptual location to help ground their concepts in Oceanside. However, these locations are not indicative of where the pilot will ultimately occur.
- The next phase of the project includes additional analysis, such as numerical modeling, to help determine the location that provides the most benefits to the broader coastline. This step also includes assessing the specifics of permitting, funding potential, and scalability of the selected concept.

RECOMMENDED PILOT PROJECT DESIGN

- The three public workshops built upon one another, each further developing and refining the Design Teams' concepts, incorporating the City Staff, Project Team, Jury, and public input. On December 14, 2023, the RE:BEACH Jury convened to deliberate, review and select a winning design team and concept. Public comments to-date were included in the Jury's deliberation. The RE:BEACH Jury unanimously recommended International Coastal Management (ICM), the team from Australia, to move forward into the next phase of work (final engineering, design and permitting).
- On January 31, 2024, Oceanside Staff will bring the recommended design and pre-identified modifications, to City Council in a workshop. The purpose of the workshop is to provide more space and time for the City Council to engage with and advise staff on the work.
- The comments gathered from the third workshop are being included in the final design recommendation, being presented at the City Council Workshop on January 31st, and are included herein.



KEY THEMES

Across the three public workshops conducted to-date, the following key themes emerged:

A Dry Sandy Beach: Overwhelmingly, respondents reported the desire to recreate on a wide, dry-sandy beach. Not only did we hear vivid memories and sentimentality for Oceanside’s beaches and surf breaks of the past, but also the desire to create coastal resilience for the future. There is a desire to offer future generations the opportunity to share similar experiences and create new memories—walk along the beach, watch the sunset, surf, play with their pets and dogs, and gather with friends and family. The ability to simply be at a beach, with sand, is a core theme heard across the competition.



Accessibility & Safety: Across all engagement, in-person comments and online feedback forms, respondents used the words ‘access’ and ‘safety’ as important components to any pilot solution. The term ‘access’ was used to refer to ease of enjoyment by elderly, children and the disabled, parking, and the ability to walk along the beach. Similarly, the term ‘safety’ was used to refer to mitigating risks, like rip currents, confidence of access the ocean, and feeling safe along and on any feature implemented through RE:BEACH. Amenities like clean bathrooms, ample parking, showers, educational and historical signage, playgrounds and recognition of native history were each mentioned as ways to improve accessibility and safety in a sand retention pilot project.



Healthy Coastal Ecosystems & Natural Elements: Through the design competition process, the public has been exposed to various amenities and programming that can be incorporated into a sand retention pilot project. In the juxtaposition between more nature-based elements and those that are more built, respondents asked for the inclusion of natural elements. Whether as a core component of the design feature or highlighting the ability to provide habitat



opportunities, Oceanside residents and regional attendees leaned towards more natural landscapes and spaces for recreating and enjoying a wider beach.

Surf Resources: Many respondents and attendees of both public workshops identified surf resources as core to Oceanside’s identity. While it is impossible to choose one form of recreating along the coast as core to Oceanside, there is little doubt, based on responses collected, that surfing and surf resources are critically important to the local and regional community. In each instance, feedback focused on the need to design strategies with surfing in mind, limit any negative impacts to surf resources, and seek alternatives that have the potential to enhance surfing amenities.



Space for Various Activities: Feedback indicated the desire for enough beach to provide space for a myriad of interests such as various sports, activities, hobbies, and a dog park.



Each of the RE:BEACH public workshops provides multiple ways for the community to engage.



In-Person

AUG 29, 2023 | OCT 17, 2023 | DEC 13, 2023



View playback online

Workshop 1 & Workshop 2 videos are available to view on the City of Oceanside’s YouTube channel and the RE:BEACH website (rebeach.org).



Submit digital feedback form

Workshop 1
August 29 to
September
30, 2023

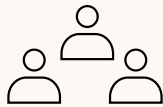
Workshop 2
October 17 to
November 30,
2023

Workshop 3
December 13
to January 13,
2024

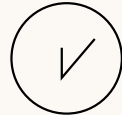
PUBLIC WORKSHOP ONE SUMMARY



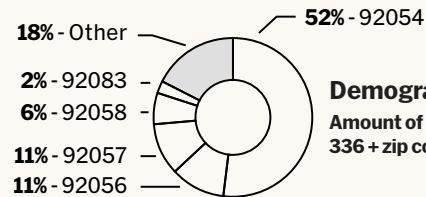
Review:
Team Slides



Attendance
more than 200
attendees



Duration
4-7pm PT,
3 hours



Demographics
Amount of Responses:
336 + zip codes

The first public workshop was held on Tuesday, August 29, 2023 at the City of Oceanside, Council Chambers. Attendees had the opportunity to meet, speak with, and view posters from each of the three design teams in an open house format. Following the open house, the RE:BEACH project team presented the design competition process followed by three short presentations, by the design teams, about their initial ideas and concepts. The workshop was open to the public from 4–7pm PT. Video recordings of the presentations and slides are available on the City of Oceanside’s YouTube channel and the RE:BEACH website (rebeach.org). An online public feedback form was made available at the start of the workshop and remained open for 30-days. Design teams were given immediate access to results, so as to quickly and iteratively integrate input directly into their designs for the second public workshop.

The first public workshop was a moment to learn about, (1) the RE:BEACH process, (2) the design teams and (3) the early concepts each team was bringing forward for consideration.

Feedback questions from the first public workshop were focused on determining conceptual preferences and strengthening the design teams’ understanding of the community and people of Oceanside. Given the origins of the design teams, feedback from the first public workshop provided insight into the major characteristics of the City and broader community.

This summary is representative of all survey questions and responses from workshop one. All public feedback and input was reviewed and incorporated into the next round of design. Answers to long-form questions and open comment fields were condensed in this summary into broader themes that emerged. While not every question or answer is included, this summary represents the key themes across all feedback received.

Deltares + MVRDV

Deltares & MVRDV presented three distinct approaches: an artificial headland/peninsula feature, a recreation focused offshore breakwater, and a multi-purpose archipelago system. The community was presented with a spectrum of options for programming these concepts that could be refined based on the desired use and aesthetic.

SURVEY QUESTIONS

What are the strongest elements you wish to have incorporated into the final design?

- Sandy Beach
- Tidal Pools
- Backshore Vegetation

Which one of these descriptions represents Oceanside stability best for you?

75% - Oceanside beach as a place for human leisure, maximum space for activities, surfing, lifeguards, swimming and restaurants.

14% - Oceanside coast becomes a productive landscape, with areas that focus on food and energy production, restoring circular systems and re-imagining relationship to the coast.

11% - Oceanside beach as a restoration zone, maximum slopes for intertidal wetlands and pools, limited access for humans, submerged reefs and floating habitats.

COMMUNITY QUOTES

“The focus should be on multiple benefits - habitat restoration, human activity, tourism, water sports, education and address the evolving nature of the shoreline - seasonally and over the years. This option focuses too much on programmed elements - which could come later. But the top priority is stabilization, seasonal variation and long term stability. I want to know what the option determines the impacts are to the communities down shore and their sand retention.”

“Love how creative these ideas are. All concepts appeal to both humans and nature.”



SCAPE

SCAPE focused on leveraging natural materials such as cobble in different forms, dunes, and nearshore reefs. They framed each element as a part of a toolkit that can be integrated to fit the desires of Oceanside.

SURVEY QUESTIONS

In this initial phase, SCAPE gathered reactions to each of their designs. Their concepts included the redesign of a waterfront park with increased accessibility, called Dunepark. The SCAPE team also presented components of their concept using stabilized cobble features, called Cobble Crests, along existing beach materials, called a Cobble Spine. All three of their concepts scored similarly.

COMMUNITY QUOTES

“I enjoyed the way team acknowledged that it is a changing coastline and the design would be flexible, have potential funding sources, and focused on sand retention. I would remind the team to keep Oceanside’s surfing identity when refining their design.”

PUBLIC WORKSHOP TWO SUMMARY



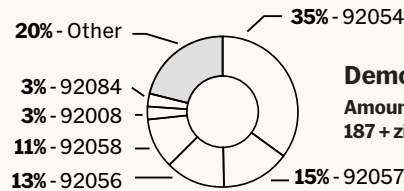
Review:
Team Slides



Attendance
more than 220
attendees



Duration
4-7pm PT,
3 hours



Demographics
Amount of Responses:
187 + zip codes

The second public workshop, held on Tuesday, October 17, 2023, convened more than 220 members of the public at the Oceanside Museum of Art (OMA) for a round-robin format workshop. Each participant had the opportunity to rotate through all three-design teams' proposed pilot projects and hear from the project team on the monitoring and adaptive management components that would complement implementing a design as well as an overview of the latest science on sediment transport in the region. The workshop was open to the public from 4pm–7pm PT and culminated in a brief report out from representatives of each design team discussing what they heard from their interactions with the public that day. Following the workshop, pre-recorded presentations and slides by each design team, and the project team were made available on the City of Oceanside's YouTube Channel and on the RE:BEACH website. A public feedback form was accessible during the workshop through November 30, 2023, to collect input directly from participants and the broader community. The feedback form was focused around user experience and perceptions of each pilot project.

Each of the three-designs teams' concepts were considered for their amenities, design, and use. The purpose of these more tailored questions was to encourage the public to provide input on the user experience of each design, how it might impact their time spent on a beach and Oceanside's coast and provide tangible programming feedback to the Design Teams, City of Oceanside and Jury around perceived community benefits.

Similar to the first public workshop, this summary is a synopsis of all feedback of public responses received from Workshop 2 as of November 17, 2023. While not every question or answer is included, the major themes and topics are representative of the feedback.

Deltares + MVRDV

Community feedback helped focus Deltares & MVRDV's approach on an artificial headland/peninsula. Using this one main feature, two concepts were presented that illustrated the opportunities to have more natural elements on the peninsula or to provide more visitor serving amenities programmed onto the structures.

SURVEY QUESTIONS

What elements in the Deltares & MVRDV designs do you want to see emphasized in a refined concept?

- Natural habitat restoration, including input from local biologists and experts, natural features like plants for shade along walkways, and inter-tidal habitat benefits
- Increased beach width, including sandy beach area
- Space for both people and dogs to access the ocean
- Safety and access, including safe swimming areas for elderly and children, and parking
- Emphasis on surf resources
- Sand, including a clearer understanding of how much sand will be retained, how wide of a beach will be achieved if successful and how the beach will interact with other natural features of the artificial headland
- Surf opportunities
- Visuals and descriptions of what the artificial headland will look like from the water's edge
- Adaptability and maintenance of the concept, including long-term solutions to sand nourishment and bypass
- Scalability of the concept over time
- Understanding of potential impacts to adjacent beaches
- Demonstrate how the concept and its programming will increase accessibility, including parking
- The use of natural elements for play and education signs, native plant species to help educate the community about the coastal ecosystems in San Diego
- Adequate space for multiple uses including bikes, walking paths, dog use areas, and various sports

What elements are missing from the Deltares & MVRDV designs that you want to see added in a refined concept?

- More open space, including a greater emphasis on the beach

COMMUNITY QUOTES

"Please make this space intentionally beneficial for the environment. Plant butterfly habitats and native plants. Have educational signs that explain what is planted and why. Have the native people represented and honored."

A coastal vision for Oceanside



SCAPE

SCAPE continued to pursue a layered approach that leveraged existing cobble resources and provided better details on ways the design could provide stabilization to the cobble crests and cusps. Additionally, SCAPE highlighted the opportunity to realign aspects of existing park and strand space to provide a more connected dunepark feature.

SURVEY QUESTIONS

What elements of the SCAPE design do you want to see emphasized in a refined concept?

- Consideration for impacts to ecology and surf resources
- Expectations around cobble crests sand retention and expansion of beach area
- Reference projects and sites demonstrating success of concept
- Better understanding of how the cobble will hold up against large surf and El Niño conditions
- Incorporating greater accessibility and safety for all beach goers, including elderly, children, bikers and pets
- More space for desired activities such as volleyball, jogging, dog park, etc

What elements are missing in the SCAPE design that you want to see added in a refined concept?

- Resilient and adaptivity to sea level rise

- Scalability to other parts of Oceanside, particularly more eroded areas in South Oceanside
- Understanding of how cobbles might move and shift over time
- Potential impacts to surf resources
- Anticipated sand retention and beach width
- Explanation of the experience users will have getting in and out of the water across and over a cobble spine
- Explanation of other potential amenities, including increased accessibility, parking, showers for surfers, and benches for sunset
- Overall cost and timeline for this concept

COMMUNITY QUOTES

“The design seems to have a decent balance between the natural and built environment. Often designers try to push as many amenities or “trophy” into a design as possible, but a beach should just be so: a beach. I appreciate the attempt to keep it as such. Please work with regional biologists to consult on the project.”

DUNEPARK NATURE BASED TOOLKIT



ICM

ICM incorporated the feedback from the first round of design by refining their concept towards a more natural looking submerged artificial reef with two headlands. This approach provides a ‘speed bump’ for sand allowing it to accumulate between the features and assist in restoring sandy beach area.

SURVEY QUESTIONS

What elements in the ICM design do you want to see emphasized in a refined concept?

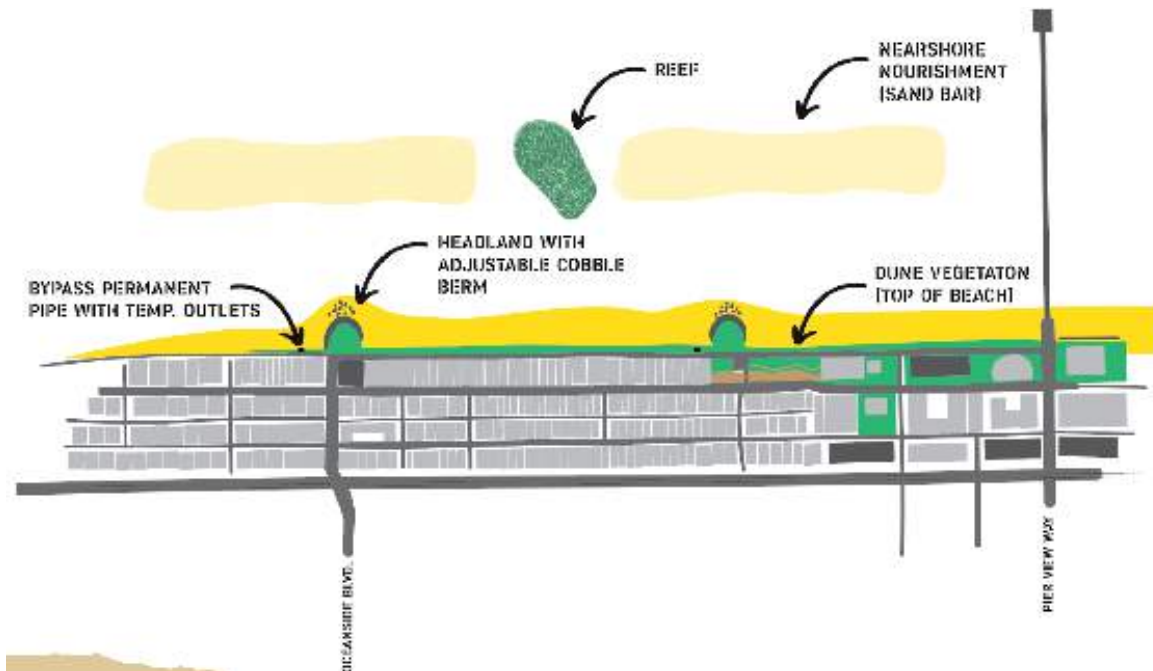
- Potential impacts to surf resources
- Better description of access improvements including parking
- Amount of beach width improvements and available space for recreational activities
- Reference projects and sites highlighting where this concept has been successful
- Explanation of how the pilot could be scaled throughout Oceanside
- Cost estimates of design and construction of pilot project
- Ecological benefits and amenities associated with this pilot concept
- Details on proposed materials and how they may create potential habitat
- Design strategies to mitigate any potential negative impacts

What elements are missing in the ICM design that you want to see addressed in a refined concept?

- Sand retention expectations with and without regular nourishment
- Impact of structures on beachgoers and surfers, including the potential for rip currents, swimming hazards, diving, fishing and surfing impacts
- Details on the shape of the artificial reef and how that intersects with sand retention and surf resources
- Articulation of recreational and ecological benefits of this design, including room to walk, space for dogs, and a park

COMMUNITY QUOTES

“Thank you for sharing proven solutions to Oceanside and to helping the community understand that there are concepts out in the world that are already working to retain sand on our shore for beach goers to use and enjoy for generations to come.”



General Survey Questions

Respondents were asked to select up to 3 beach amenities from a list of options that could be provided by the proposed design. The top 3 amenities desired by the public were the same across all teams, demonstrating a consistent desire from the Oceanside community. In no particular order, the top 3 responses are provided below.

- Beach Day
- Surfing
- Walking

Respondents were asked if there is anything in particular you would like to see at upcoming Public Workshops that would help you contribute to the RE:BEACH competition process?

- Financing, including cost comparison
- Overall project timeline
- Impacts, including on marine ecosystems
- Inclusivity, including diversity of representation and ease of hearing presentations / design teams
- Public Q+A with the Project Team
- Proof of concept
- Consistent replenishment of our beaches throughout the region, not just in Oceanside
- Hear from the Jury, including their deliberation around each concept and a chosen 'winner'
- Scalability of each concept

Respondents were asked what do you most look for with access to a wider, dry-sand, beach?

- Nature and ecosystems, including native plant species, clear paths for walking, and healthy habitats
- A wide beach, including space to spread out and lessen crowds, room to walk, and dry-sand
- Surf resources
- Safe spaces and access, including bathrooms with showers, parking, room to walk and recreate
- Recreation, including walking, sunbathing, playing in sand, and other beach activities
- Resilience and protection, including from impacts of sea level rise
- History, educational signage and interactive learning, including acknowledgment of native peoples



GENERAL QUOTES

“I mostly look for a place to lay down my beach gear for the day, that also has decent waves in front so I can enjoy a sandy spot to play with my kids and somewhere that I can paddle out and catch a few waves with my husband.”

“Beach access (sand) at existing beach access points. More sand means that I can walk to more waves or take a long beach walk. More sand on the beach likely means better sand bars for surfing.”

“An old fashioned day at the beach walking, swimming, surfing with access by car not too far away and free.”

“Sufficient trash bins, native plant species and educational signage, and native people being honored.”

“The ability to lay out on the beach and have a nice beach day. Also emphasis on some area where dogs can play off leash.”

PUBLIC WORKSHOP THREE SUMMARY



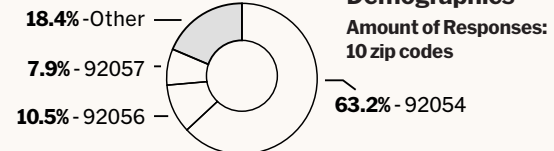
Review:
Team Slides



Attendance
more than 150
attendees



Duration
4-7pm PT,
3 hours



The third public workshop was held on Wednesday, December 13, 2023 at the Junior Seau Beach Community Center. Attendees saw presentations from each of the three Design Teams, detailing their final pilot project concepts. Following team presentations, the public was able to ask questions to teams in the form of a live question and answer panel. The workshop was open to the public from 4–7pm PT. A video recording of the presentations and slides are available on the City of Oceanside’s YouTube channel and the RE:BEACH website (rebeach.org). An online public feedback form was made available at the start of the workshop and remained open for 30-days.

The final public workshop was an opportunity to (1) learn about each Design Teams’ proposed pilot project concepts, (2) ask questions directly to the Teams and (3) gain insight into the RE:BEACH process; including how Teams incorporated previous public comments into their designs.

The online feedback form for the final workshop was focused on what the public wanted to see in expanded on for each design in the next phase of the project. Additionally, the feedback form included questions on the RE:BEACH process overall, asking respondents to comment on ways they were or were not engaged with Oceanside’s Coastal Resilience Competition. The responses were made available to City Staff, who worked alongside RE:BEACH Jury to bring forward a single recommended pilot project, to City Council on January 31, 2023.

The summary below includes information from the in-person question and answer panel, as well as, the online feedback form.

DELTARES + MVRDV

The Dutch team’s “Green Dream Peninsula” design would pilot the use of a natural peninsula structure, constructed perpendicular from the existing coastline. A combination of existing materials and new boulders, this peninsula would extend out approximately 360 feet in length and 500 feet in descending width without obstructing ocean views. The boulders and other rocks would create a bulge in the shoreline to support sand retention while still allowing the flow of the creek. The space would create new space for increased recreation and opportunities for environmental enhancement.



SURVEY QUESTION

If Deltares & MVRDV’s design moves forward, what aspects would you like to see refined in the final engineering design and environmental review phase?

From all responses, the following themes emerged:

- The public articulated some concerns over safety of beach goers in the accessing ocean-facing, saltwater pools and sustaining water quality with an urban creek flowing out adjacent to the pool.
- The public had difficulty understanding the potential scalability of this concept, as headlands may need to take on different shapes at different locations to retain sand and the overall size seems marginal for the desired objective of maintaining a sandy beach.
- The public expressed concerns over the placement of the feature at Buccaneer Beach and the potential impacts to surf resources.

COMMUNITY QUOTES

“Love the headland design, but very large and too many design complexities that could be added after performance is verified. Simplify it! Why only one headland? Limits scope of beach restored.”

“Further consideration of water quality at the outlet. Love the integration of the natural and built environment here.”

SCAPE

The SCAPE Team's "Dunepark/Hybrid Beach" design proposed the construction of perched sandy beach fronted by a system of cobble features and boulders. The cobble berm would undulate with horns or crests that would extend seaward from the primary cobble berm. The design consists of 3 small cobble crests and 4 large cobble crests. The design also consists of 4 nearshore reefs placed seaward of the crest in the inter-tidal zone with the reefs being approximately 90ft long and 70ft wide. The shoreline concept could be combined with the repurposing of upland areas. DunePark is a concept that repurposes Tyson Street Park into a beach and dune area with various recreational amenities (restrooms, dog park, playground). This concept involves the landward realignment of the South Strand roadway.



SURVEY QUESTION

If SCAPE's design moves forward, what aspects would you like to see refined in the final engineering design and environmental review phase?

From all responses, the following themes emerged:

- Dunepark proposed to create a more usable and appropriate Tyson Street Park, but retreat of the Strand seems arduous.
- Overall, the public expressed a general concern around the Hybrid Beach concept feasibility and its ability to perform, as it had not been tested or tried in any other location.
- Cobble is challenging and difficult to walk on, making the usable beach space potentially less accessible.

COMMUNITY QUOTES

"My second favorite option. No examples of working in other areas, but theoretically makes sense. Looks like would be more limited in full scope for all of Oceanside beaches."

"Not interested in more cobble to combat beach loss. Seems like we will have continuous equipment redistributing cobble after every large tide or storm. Not proven. Like dune park, but that could be implemented by parks and recreation"

ICM

Taking their success on Australia's Gold Coast, ICM's "Living Speedbumps" approach proposes to construct one multi-purpose offshore reef (either of rock or geotextile bags) and two artificial headlands. The submerged, offshore reef could vary in size based on material selected and would be placed roughly 900' offshore at a depth of approximately 40'. The artificial headlands would extend seaward 150' and would be 150' long across 1,700 linear feet of shoreline. The headlands and reefs would slow down wave dynamics allowing sand to gather between the features.



SURVEY QUESTION

If ICM's design moves forward, what aspects would you like to see refined in the final engineering design and environmental review phase?

From all responses, the following themes emerged:

- The ICM Living Speed Bumps concept overwhelmingly received positive input for its professed ability to retain sand and provide other recreational benefits.
- ICM received an abundance of written comments from the public, stating their concept was their "favorite" or "best" option.
- The public viewed the potential to scale the ICM high, with a whole shoreline solution seemingly most feasible with this design.
- Recommendations included a need to consider influences of the reef and headlands on sand bar formation and function, and its influence on surf resources.

- There was suggestion that as the design progresses there should emphasis and consideration of how the structures they may impact the safety of surfers and swimmers.
- The public expressed a desire to see more natural design elements in the design of the headlands.

COMMUNITY QUOTES

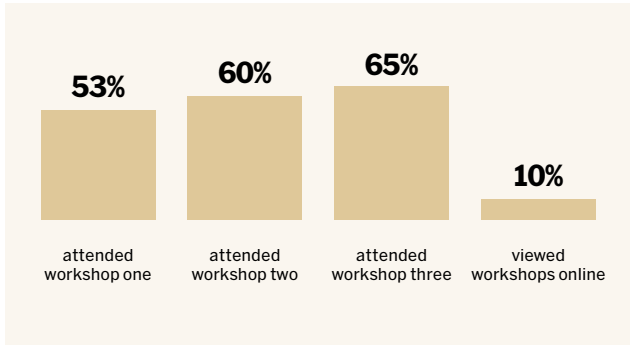
"Consider modifying the viewing platform design for a more natural look. I appreciate the close attention to surf potential and wide sandy beaches created for recreation under this design."

"I think that their experience on the Gold Coast shows they have refined the approach that has been proven to work. I wish the sand bypass was still a part of. Maybe a future consideration."

RE:BEACH Process & General Survey Questions

SURVEY QUESTIONS

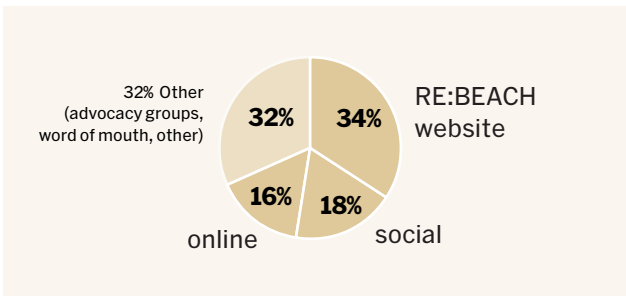
Which public workshop did you attend?
(select up to three)



Did you follow RE:BEACH virtually on www.rebeach.org?

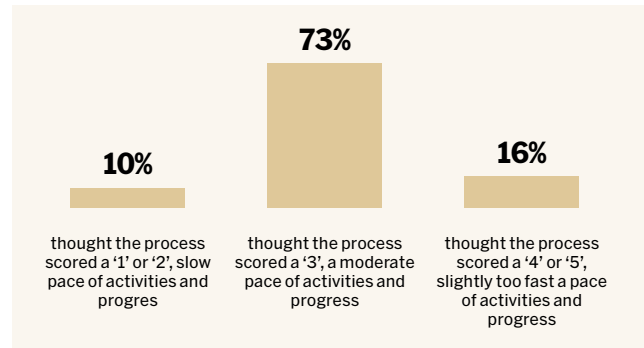


How did you get the majority of information about the RE:BEACH Oceanside effort?

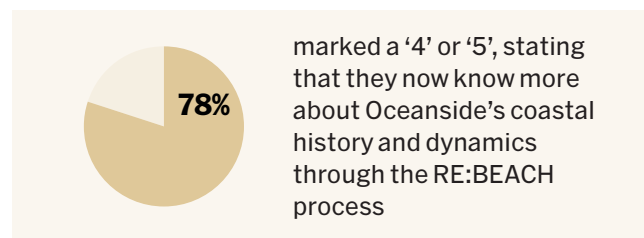


- The majority of respondents gained information online, through the RE:BEACH website, social media and generally online.
- However, there were many different types of responses that included ‘advocacy groups’, ‘Save Oceanside Sand’, and the ‘City of Oceanside’s Coastal Management Website’.

RE:BEACH was a 8-month long process, from selecting 3 Design Teams to determining one winning concept. While it was designed on purpose to be expedited based on the current condition of the Oceanside shoreline, we are seeking feedback on the length of this design competition. On a scale of 1 (too slow) to 5 (too fast) how would you rate Oceanside’s Coastal Resilience Competition?

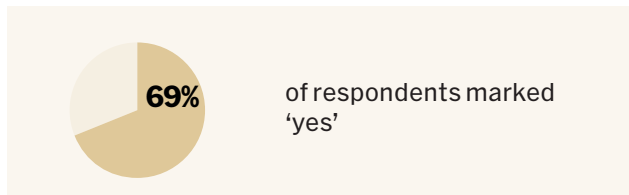


Through the RE:BEACH process, do you feel you know more (5), the same (3) or less (1) about Oceanside’s coastal history and dynamics?



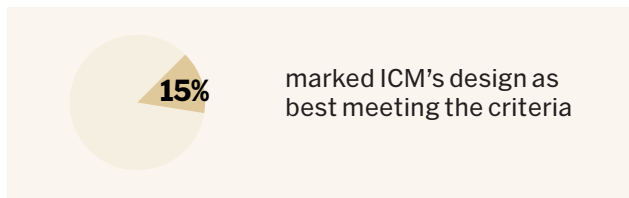
- 22% of respondents marked a ‘3’, for moderate learning through the RE:BEACH process
- No respondents marked a ‘1’ or ‘2’ to designate they did not learn something through the process

RE:BEACH aimed to prepare the City of Oceanside for adaptive coastal management of a pilot project for near-term resilience, while considering longer-term coastal management needs to ensure access to Oceanside’s beloved beaches well into the future. Keeping this in-mind, do you feel the pilot projects address near-term solutions while considering longer-term management needs.



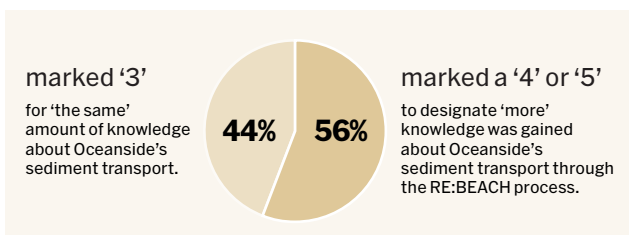
- 6% of respondents marked 'no'

If you feel one design in particular stands out as upholding this criteria, rate that proposed design.

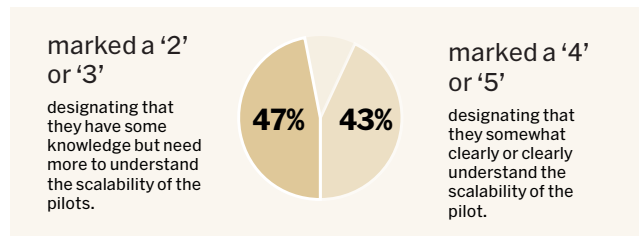


- 3% marked SCAPE’s design as best meeting the criteria
- 3% marked Deltares + MVRDV’s design as best meeting the criteria

Through the RE:BEACH process, do you feel you know more (5), the same (3) or less (1) about Oceanside’s sediment transport dynamics within the region?

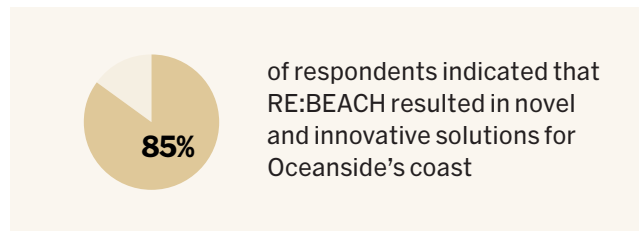


The Design Teams demonstrate how each pilot might scale throughout Oceanside, how clearly do you understand the potential scalability of the pilot project?



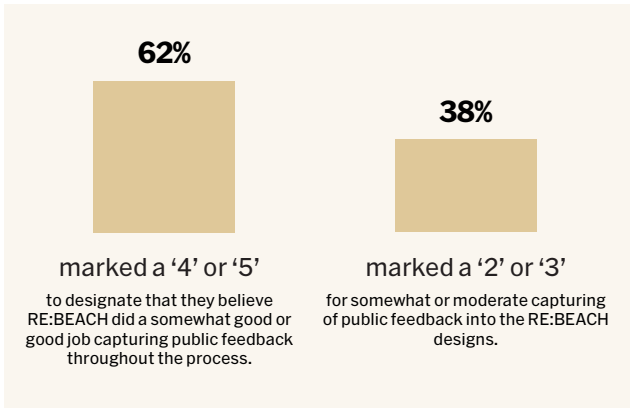
- This is the response we would anticipate given the status of each of the Teams’ designs and the work in the next phase to clearly define a site for the pilot and scalability.

When considering the three Design Team concepts, has RE:BEACH resulted in novel and innovative sand retention pilot projects for Oceanside?



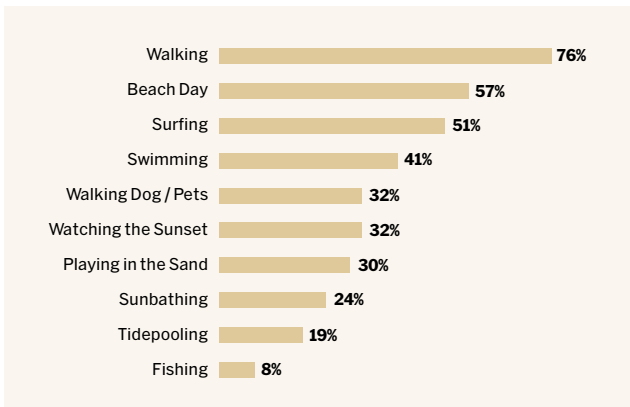
- Of the submitted responses, there was not a single respondent who marked 'no', rather several respondents marked with additional comments on the importance of innovation, novelty, and which team they preferred.

Each team was provided with opportunities to interact face-to-face with the public at workshops, all submitted public feedback, and had reviews with the City and Project Teams. How well did you feel teams incorporated public feedback into the updated designs?



- No participant marked a '1' or 'did not' capture public feedback.

We want your feedback to determine how you'll use the restored beach area. From the list of amenities below, which are most important to you? (select up to 3)
 Across all 3-surveys, we asked respondents to rank beach amenities most important to them. The results from the final survey are below and reflect what we have heard throughout the RE:BEACH Process.



Do you have any feedback for the City of Oceanside on the experience and overall process of RE:BEACH?

“Well done. Only issue not addressed was the source of funding and federal government commitment to resolve liability for harbor construction.”

“Great job working through this entire process! I know it was a lot and it moved fast. We are very excited for the next steps.”

“The City did an excellent job! I’m not sure how it could be done better. I hope that we can get the winning proposal permitted, funded and built!”

“Amazing process! Keep the communication open and flowing! Use the selected design to address our most devastated sections of beach...SOUTH!!!! Let’s go with the pilot and a plan for the entire Oceanside coast-line!!!”

“Great concept to have multiple teams submit their designs. ICM has the best proven concept. It will actually allow a sandy beach with a natural look.”

“Many thanks to Jayme! Also thanks to City Council members for helping to advance this crucial project and to keep the public engaged.”

RE:BEACH

Jury Deliberation Summary Report

12/14/2023, Mission Pacific Hotel, 8am - 5pm

Participants

Jurors:

- Chris Abad—Surf Resource Preservation—Director, Oceanside Boardriders Club.
- Bob Ashton—Community Representative & Coastal Advocate—President/CEO, Save Oceanside Sand (SOS).
- Scott Ashton—Community Representative—Chief Executive Officer, Oceanside Chamber of Commerce.
- Dr. Curt Busk—Community Representative & Coastal Advocate—President, Buena Vista Audubon.*
- Megan Cooper—Coastal Grant Funding Expert—Deputy Regional Manager, California State Coastal Conservancy.*
- Dr. Lesley Ewing PE—Coastal Management Expert—Former Sr. Coastal Engineer, California Coastal Commission.
- Karen Green—Nearshore Marine Expert—Division Manager, Marine and Aquatic Ecosystem Resources, Tierra Data, Inc.
- Councilmember Joy Lyndes—Coastal City Representative—Encinitas City Council.
- Dr. Dan Pondella—Nearshore Marine Expert —Professor, Biology; Director, Vantuna Research Group, Occidental College.
- Ernie Prieto III—Community Representative—Local Business Owner (Ocean Sea Charter), Boat Captain and sitting member of City of Oceanside’s Harbor and Beaches Committee.
- Mitch Silverstein—Coastal Advocate—Surfrider Foundation San Diego Chapter.*
- Councilmember Dwight Worden—Coastal City Representative—Del Mar City Council, Chair of SANDAG Shoreline Preservation Working Group.

Absent jurors:

Note: Charles Lester and Jeremy Smith, while they were unable to fully participate, provided written comments in advance as an input into the deliberation process.

- Dr. Arye Janoff—Coastal Management Expert—Coastal Geomorphologist, Planner & Manager with a U.S. Federal Agency.*
- Dr. Charles Lester—Permitting Viability Expert—Director, Ocean and Coastal Policy Center, Marine Science Institute, UC Santa Barbara.
- Jeremy Smith PE —Coastal Management Expert—Coastal Engineer, California Coastal Commission.*

Project Team members in attendance: Jayme Timberlake (City of Oceanside), Brian Leslie (GHD), Nick Sadrpour (GHD), Sam Carter (RCC), Alex Klein (RCC), and Maranda Ngue (RCC)

Design Teams (present only during their time slot):

Deltares/MVRDV: Fokke Moerel, Maria Stamati, and Kees Nederhoff

SCAPE and ESA: Gena Morgis, Pippa Brashear, and James Jackson

ICM: Aaron Salyer and Sam King

**indicates jurors whose role is advisory and non-voting, their ideas, input and role is purely their own expertise and does not represent the opinion of the various organizations they represent professionally.*

Description of process

The Jury for the RE:BEACH Oceanside Coastal Resilience Competition was selected by the City of Oceanside and announced in May, 2023. The Jury represents a range of expertise, from local and community leaders, downcoast regional neighbors, Non-Governmental Organizations, regulatory and funding agencies, and scientific experts. Throughout the three design rounds of the RE:BEACH competition, jurors were invited to participate in the Public Workshops, were regularly briefed by the Project Team on the designs as they evolved with public input, and provided review of public input—including input received during the final public workshop on December 13, 2023.

On December 13, 2023, Design Teams made their final presentations during the third Public Workshop at Junior Seau Beach Community Center in Oceanside. The following day, the Jury met to hear directly from the teams and deliberate about their proposed concepts to the City. At this meeting, the morning was dedicated to one-hour interviews with each of the three Design Teams. In these sessions, Teams were able to present conceptual and technical information about their designs, and respond directly to Jury members' questions. The afternoon was dedicated to discussion between the Jurors, with assistance from the Project Team, about each design. Teams were available to remotely answer questions that emerged from the discussions. Every Juror was asked to comment on each design, and to make any recommendations on how the designs might be adapted or improved. Following over two hours of discussion as a full jury, the voting members of the jury held their first vote. Jurors could cast one of three voting options for each team: "Support," "Support with reservations," or "Do Not Support." Jurors could also provide comments on their ballot. This voting mechanism allowed jurors to support more than one project, and it captured the nuance of their different perspectives. Following the first vote, jurors then continued to deliberate and ultimately arrived on a final recommendation with unanimous support.

The Jury serves as a third-party reviewer for the City of Oceanside to guide its decision-making. The Project Team (including GHD, Inc. and Resilient Cities Catalyst) prepared this summary report for the City as a follow up to the jury deliberations to 1) document the spirit of jury discussion, 2) detail the recommendations offered by the jury members on each of the designs, 3) portray the winning design team and concept and the justification for that selection, and 4) showcase the recommendations provided by the jury to the City on a path forward with the winning design concept.

On January 31, 2024, City staff will present the winning design for the Oceanside City Council to adopt, allowing 1 pilot project to move into engineering design and permitting. In addition to the Jury's recommendation, City staff will consider Project and City Team recommendations on how to implement the proposed design recommendations, as well as, public feedback on the designs, collected through mid-January.

RE:BEACH Jury Final Recommendation

The Jury unanimously supports with some modifications the International Coastal Management (ICM) concept design, "The Living Speedbumps." This proposal includes the construction of two artificial headlands, as well as, the construction of an artificial reef, roughly 130,000-250,000 square feet, the exact size of the reef will be determined in the next phase of final engineering and permitting offshore between the two newly constructed headlands (). The headlands were designed to mirror the size of the existing headland functionality of the base of the Oceanside Pier. This new coastal infrastructure would be supported by initial onshore and nearshore (i.e. placement on the sandbar) nourishment and ongoing annual maintenance.

The core rationale for selecting the ICM proposal was the concept's ability to meet the project goals and design criteria set forth in [the design brief](#). The overarching goal of RE:BEACH is to "construct

an innovative, multi-benefit, sand retention project on the City of Oceanside's beaches that serves both local and regional benefits." The ICM concept demonstrates a potential for positive impact in retaining sand. The ICM concept also demonstrates consideration for the five design criteria categories: Physical, Financial, Environmental, Social and Regional. Most notably, a clear consideration for potential neighboring-coast impacts (both North and South of Oceanside), the relevance of the ICM team's experience in the Gold Coast of Australia, the use of proven technologies in the design, the opportunity to design and deploy a reef with the intent to provide multiple benefits (e.g. ecological and recreational), and the leveraging of existing infrastructure to extend its effectiveness.

The two key modifications to the winning design proposed by the Jury are:

- Refinement of the design of the artificial headlands and a thoughtful proposal for programming on top of the headland. Several jurors requested the use of materials that better complemented the natural space and a headland design that better fits Oceanside's character. The finalization of the headland design needs to consider the opportunity for creating multiple-benefits. Walkability around the headlands at high tide may also be a concern during certain seasons or following large erosion (i.e. high wave) events.
- Strong consideration of the use of natural materials (i.e. quarry rock or another alternative to geotextile bags) for the artificial reef. Several jurors raised concerns and objections about the use of geotextile materials proposed by ICM for three reasons: increased maintenance cost to replace or repair geotextile bags, the introduction of non-natural and/or plastics into the water, and related public perception and permitting issues.
 - ICM responded to jury questions about the geotextile bag option, stating that the use of the geotextile bags versus rock allows the City to pilot the viability of an artificial reef to influence beach sand retention at a cheaper, up-front cost.
 - As the reef advances in design, the City should go further in exploring potential ecosystem and surf benefits that the reef could provide. The City should also be prepared to provide mitigation for habitat conversions (i.e. conversion from sandy subtidal habitat to artificial reef).

In addition, the Jury recommends that the City consider SCAPE's Dune Park concept separate from the RE:BEACH process. The Jury believed that a Dune Park could provide an improvement over the current Tyson St. Park space.

Overview of Juror Voting

- In the first round of voting, 100% of jurors did not support the SCAPE proposal for a "Hybrid Beach" (see comments below).
- However, there was consensus that the Dune Park concept should be considered as a project for the City, separate from RE:BEACH.
- After voting and discussion, 100% of voters either "supported" or "supported with reservations" both the ICM and Deltares/MVRDV proposals. However, a majority of jurors had significant reservations about the Deltares/MVRDV proposal, and a majority of jurors supported ICM without reservations.
- After further deliberation, jurors were asked to rank their preference for ICM and Deltares/MVRDV. ICM was the first choice of 6 jurors, while Deltares/MVRDV was the first choice of 3 jurors. The jury unanimously agreed that ICM was its recommended concept and team and outlined clear modifications to explore in the next phase of work.

RE:BEACH Jury Feedback on Designs

The following is a summary of the deliberations and discussions of the jury members at the meeting on December 14, 2023. While feedback is unattributed to specific jury members, all jurors had an opportunity to review this report for accuracy before delivery to the City.

ICM

- Unanimous support for implementation, with some modifications and reservations
- Overall, strong preference for a proposal that maximizes retained sand, usable beach, and is scaled appropriately for the current state of Oceanside's coastline
- Appreciated linking the local reference of the 'headland' at base of pier
- Scalability of the design was easy to understand and apply across Oceanside
- Rework design of headlands to entail a more natural integration along the coast, explore more nature-based strategies/materials, adjust the shape to mimic natural headlands found along the California coast, and fine tune expectations and approaches to backshore dune connectivity
- Confidence in the experience of ICM team and in their capacity to execute their proposal, with the success of the Gold Coast providing precedent. However, differences in wave climate between the Gold Coast and Oceanside raised potential concerns with suggestion for additional modeling to confirm design estimates relative to sand retention
- The creation of an artificial reef, focused on sand retention, provides an opportunity to pilot a new solution for California, which could be applicable to many communities
- Expectations around increased surf opportunities with the artificial reef need to be managed since improving surf resource is not a main objective of the artificial reef
- Project designed to slow, but not stop, sand movement through the littoral cell upcoast and downcoast gives recognition to regional needs
- Integrated onshore and offshore combination of elements designed to work together to restore natural conditions
- Post-construction modifications or adaptations to the reef will be difficult to implement so design options should be carefully modeled with this in mind

Deltares/MVRDV

- Unanimous support for implementation, with significant reservations
- Appreciation for nature-based connection to Loma Alta watershed and creation of aesthetic headland that mimics natural conditions. However, the design ultimately functions similar to traditional shore perpendicular coastal engineering structures
- Jury overall felt the performance estimated by the team was likely exaggerated and actual benefits of only one proposed peninsula would be too minor given the effort required to implement. Team could have proposed two peninsulas, as a part of a pilot program, to assist with meeting the scale of challenge that Oceanside currently faces, while still remaining within budget
- Concern about inlet stability and water quality if located at Loma Alta creek and refinement on hydrodynamics would be necessary to ensure proper flushing and connectivity
- Swimming tidal pool feature, while intriguing, was not supported by the Jury for cost/benefit and public health and safety concerns

- Uncertainty on where sand will accrete (north or south) of feature, and to what extent it will be able to retain sand, and a lack of confidence that sand retention will occur south of the feature
- Potential flanking impacts north or south of structure; there will be challenges with tying the structure into private revetment at base of feature

SCAPE

- Significant desire to see Dune Park component implemented through separate process, potentially led by City Parks and Recreation department
- Hybrid Beach concept was judged to be infeasible
- Uncertainty of sand accretion and structural integrity of system
- Likely would require more frequent and costly maintenance than anticipated by the team
- Was seen to provide the lowest potential for retention and accretion of sand
- Innovative and interesting design, and repurposing cobble could be beneficial for many locations, but ultimately as an untested solution using cobble stabilized by boulders was seen as too risky with too little potential positive impact, especially as a potential pilot at one of the City's most popular beaches
- Perception of adding cobble to shoreline can harm overall project objectives.
- Vertical access down cobble berm face and perched beach represents changed beach user experience (users are elevated above foreshore)
- Cobble sourcing and beach matching challenges
- Concern that the combination of cobble fingers and reefs could set up local rip currents

Overall Next Steps

- The winning concept is a major milestone for the overall project
- This selection of a winning design is part of a larger process that will continue to require active and transparent public participation amongst the local Oceanside community and greater San Diego coastal region. All opportunities pursued under RE:BEACH should leverage and intersect with ongoing efforts at the regional level, including potential inclusion as the pilot project identified as part of RBSP III that is currently in the early stages of planning
- With a concept selected, additional analysis on the ICM design, size/shape of reef and headlands, anticipated sediment transport mechanics, and integration of features with existing management practices is planned. GHD in concert with ICM shall work towards developing a robust monitoring and adaptive management program that identifies specific metrics and key strategies to reduce and mitigate any potential impacts.
- Further consideration for the location and site of the pilot is required to generate the greatest public benefit
- Mitigation will be required for any significant impacts to habitat and/or beach conditions.
- Transparency and public engagement, including neighboring cities, is important throughout the next steps.



RE:BEACH

OCEANSIDE, CALIFORNIA

PROJECT NARRATIVE
 "Living Speed Bumps"
 CONCEPT DESIGN | DECEMBER 2023

Item #1



International
 Coastal
 Management
 EST. 1989 | QLD, AUSTRALIA

OCEANSIDE TODAY

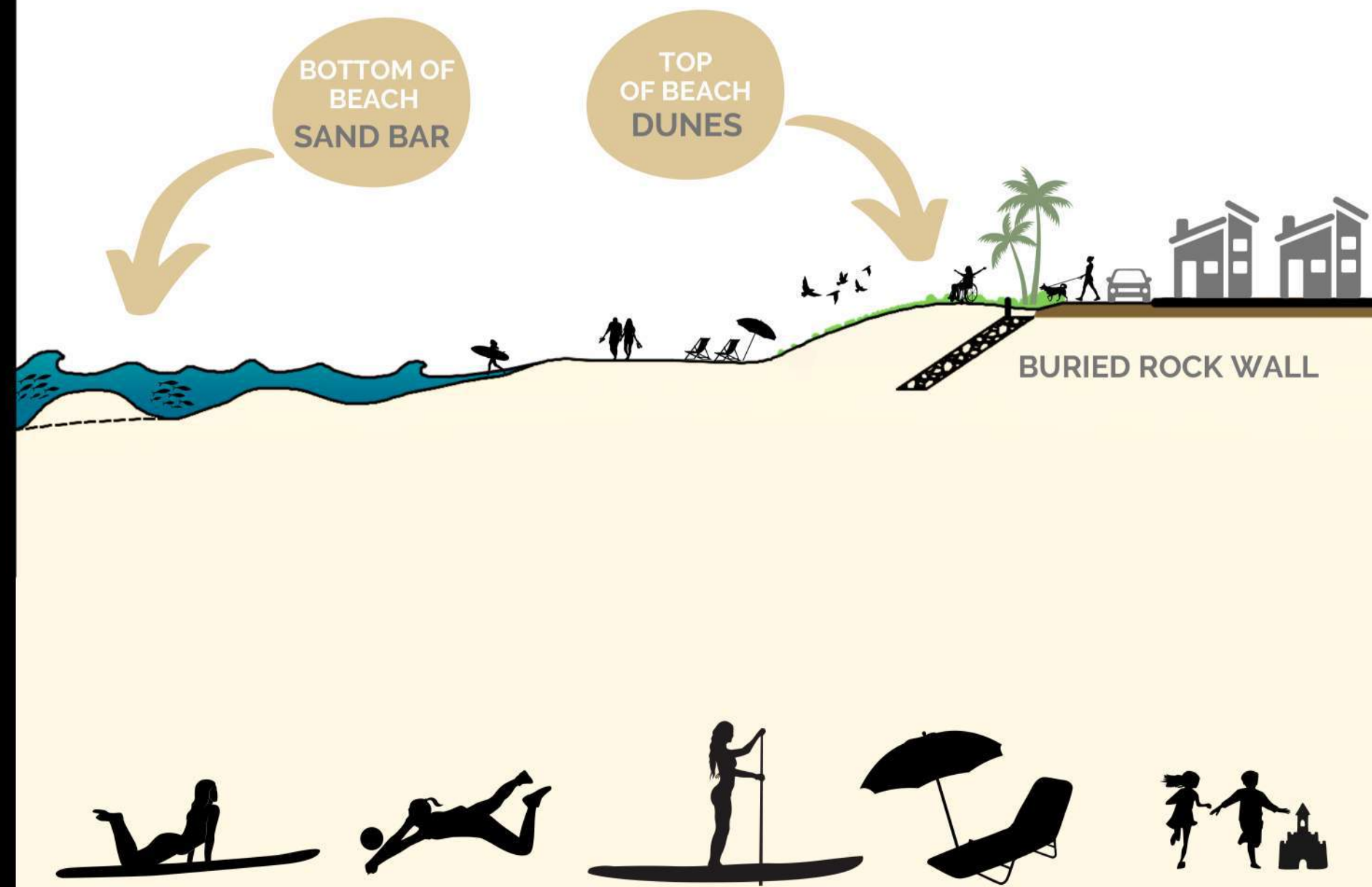


Leverage & build on ICM's RE BEACH experience. Customize for local conditions.



OCEANSIDE FUTURE

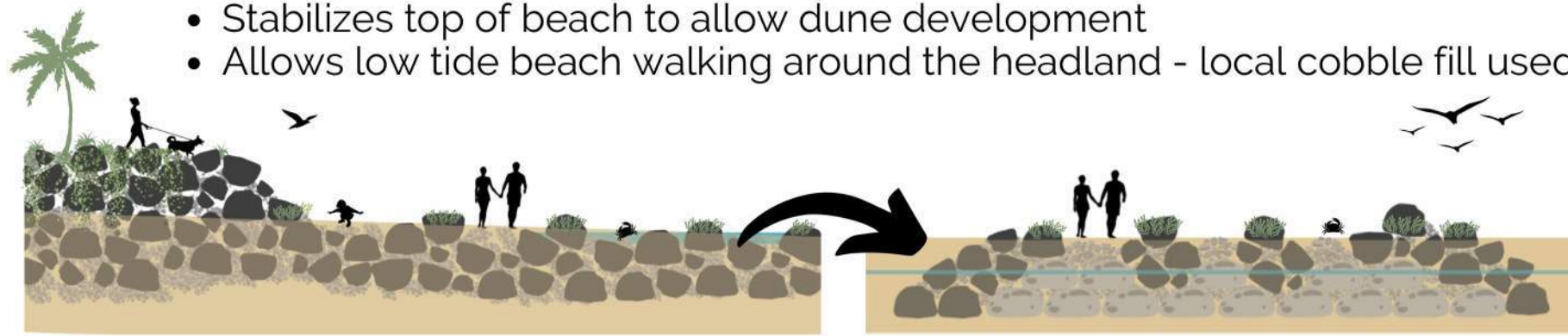
- ✓ Create a Healthy Beach Profile ("Living Shoreline")
- ✓ Retain & Manage a Living Shoreline (for an extended timeframe with living 'speed bumps')



PROPOSED 'SPEED BUMPS' (TOP & BOTTOM OF BEACH) SCHEMATIC CONCEPTS

A Living Headland & Low Permeable Berm

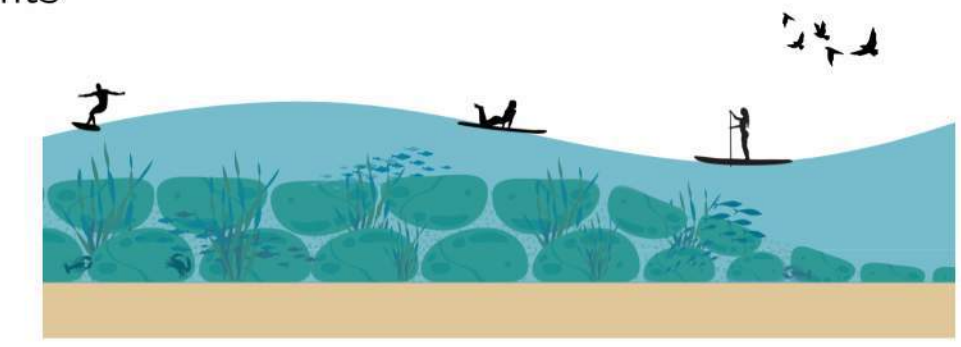
- Based on existing pier headland scale & permeable extension into surf zone (piles)
- Stabilizes top of beach to allow dune development
- Allows low tide beach walking around the headland - local cobble fill used



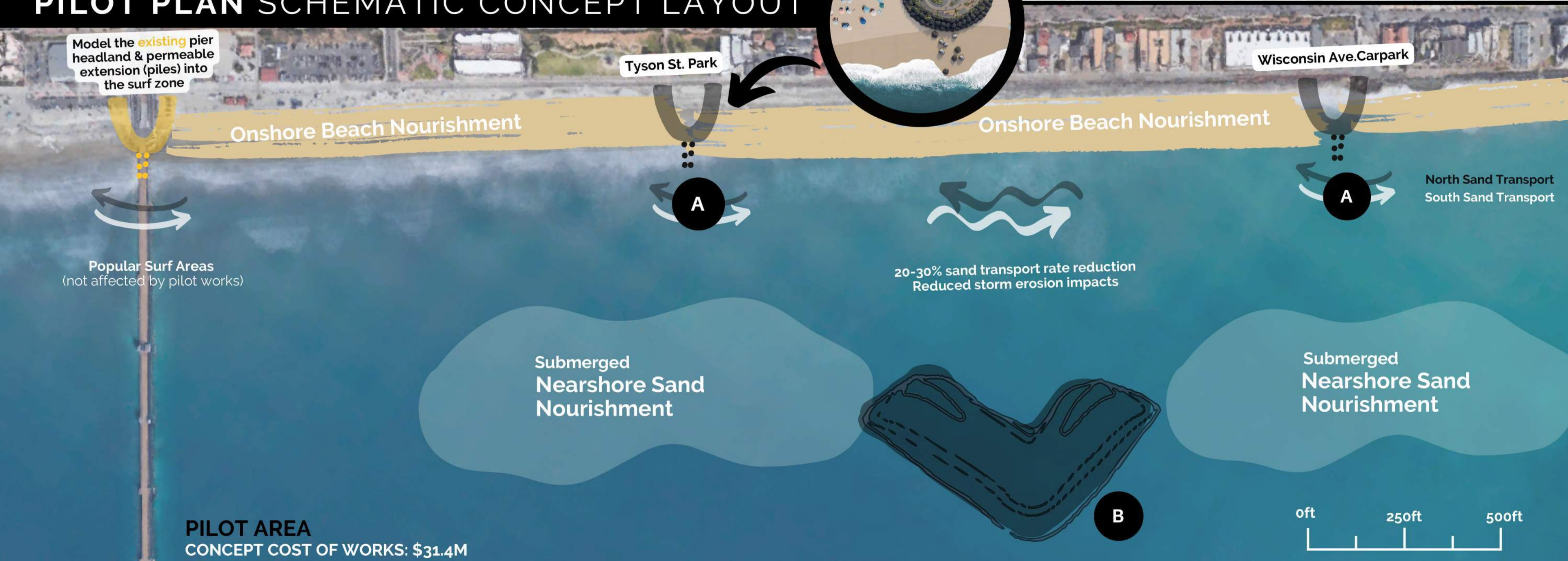
B Eco-Engineered Reef (Submerged)

Exhibit 2

- Based on proven Gold Coast examples (20 years+ in similar conditions)
- Improves sandbar retention & reduces beach erosion
- Ecological and surf benefits



PILOT PLAN SCHEMATIC CONCEPT LAYOUT



PILOT AREA
CONCEPT COST OF WORKS: \$31.4M

BEACH USABILITY

SCHEMATIC CONCEPT LAYOUT



Public park and seating around headland



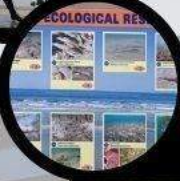
Safe, sandy beach access



Increase surf potential



Eco-education point & surf showers



Contest viewing



Low tide walkway



ENVIRONMENTAL BENEFITS

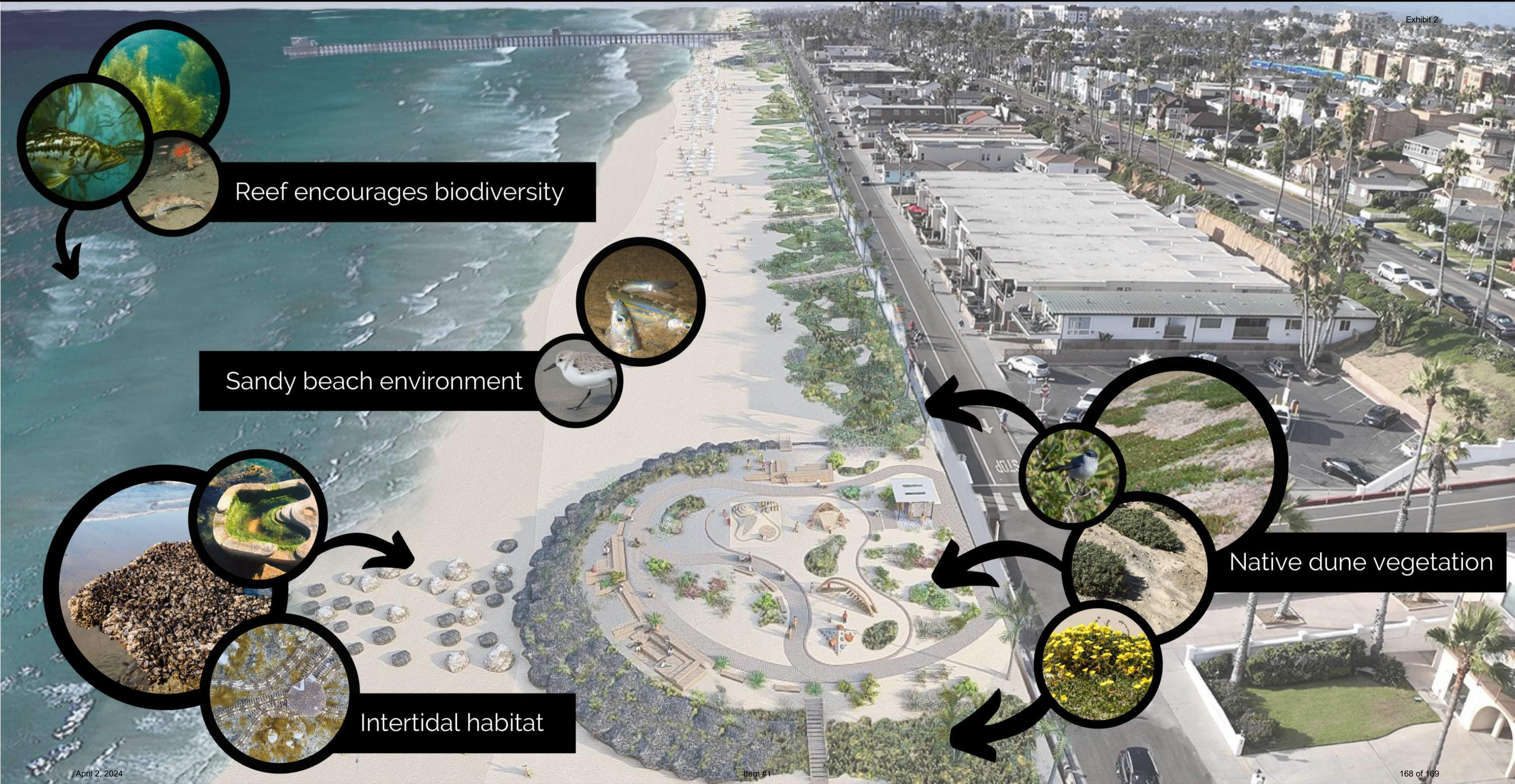
Exhibit 2

Reef encourages biodiversity

Sandy beach environment

Intertidal habitat

Native dune vegetation

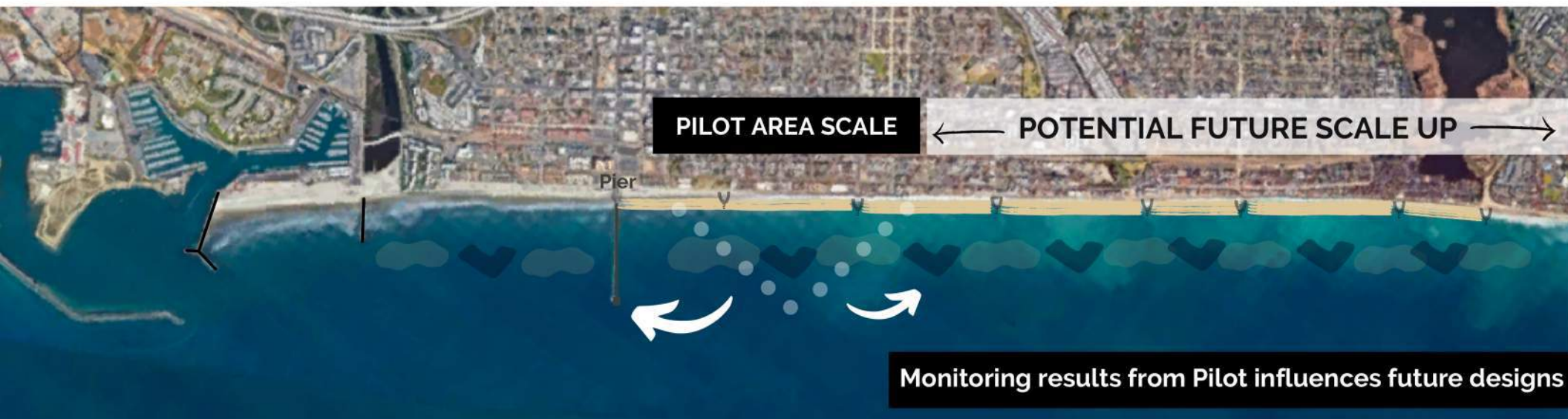


"LIVING SPEED BUMPS" & COASTAL RESILIENCE

Slow down natural processes to retain sand longer. Not 'trap' sand.



OCEANSIDE 'REEF CITY'



Adaptability & Future Considerations

Exhibit 2



Top of beach - stabilize

- Headlands stabilize top of beach
- Allows dunes to develop
- Dunes retain sand for sea level rise buffer
- Headlands and dunes provide green corridors along beachfront for ecological stimulation

Bottom of beach - stabilize

- Reef stabilizes bottom of beach
- Helps to retain sandbars
- Sand bars and reef provide buffer from increasing sea level rise/climate change storms
- Reef increases offshore biodiversity (local and regional)

Improved sand retention across the whole beach profile ("living shoreline") is easily scalable



Keep building on decades of real-world, coastal resilience development for a greener, sandier Oceanside into the future



Staff Report

Meeting Date: April 2, 2024

To: Beach Preservation Commission

From: Kyle Lancaster, Parks & Recreation Director

Staff Contact: Nick Stupin, Parks Planning Manager
nick.stupin@carlsbadca.gov, 442-339-2527

Subject: Batiquitos Lagoon Foundation Activities

Recommended Action

Receive an informational report on the activities of the Batiquitos Lagoon Foundation.

Discussion

Deb Mossa, Vice President of the Batiquitos Lagoon Foundation, will discuss the foundation's conservation, restoration, and enhancement efforts for the Batiquitos Lagoon. Ms. Mossa will also discuss the ecological benefits of the regular maintenance dredging of the lagoon, including the resulting sand replenishment at South Ponto State Beach.

Exhibits

None



Staff Report

Meeting Date: April 2, 2024

To: Beach Preservation Commission

From: Kyle Lancaster, Parks & Recreation Director

Staff Contact: Tom Frank, Transportation Director/City Engineer
tom.frank@carlsbadca.gov, 442-339-2766

Katie Hentrich, Senior Program Manager
katie.hentrich@carlsbadca.gov, 442-339-2623

Subject: Adaptive management plan for the South Carlsbad Boulevard Climate Adaptation Project

Recommended Action

Receive a report on how a 1-mile segment of south Carlsbad Boulevard could be managed to protect people, the environment and infrastructure from the effects of anticipated sea level rise.

Executive Summary

Traffic safety and environmental sustainability are top City Council priorities. A California State Coastal Conservancy¹ grant provided the City of Carlsbad with an opportunity to advance both priorities by redesigning a section of Carlsbad Boulevard prone to flooding and vulnerable to future sea level rise. The grant was intended to demonstrate how coastal cities could move and adapt infrastructure based on the latest sea level rise modeling.

The 1-mile segment of southbound Carlsbad Boulevard addressed by the grant, between Manzano Drive and Island Way, is located within the project area of a longer-term city project from Manzano Drive to the city's southern border at La Costa Avenue. That larger project envisions moving the southbound lanes of Carlsbad Boulevard to the east and repurposing about 60 acres of coastal land for recreation, trails and other uses.

¹ The Coastal Conservancy is a state agency established in 1976 to protect and improve natural lands and waterways, help people access and enjoy the outdoors, and sustain local economies along the length of California's coast.



The grant project for the 1-mile segment included two main components:

- Road plan: The first is a conceptual design showing how the road could be moved away from the immediate coastline, where modeling shows the sea level will rise in the next 96 years.
- Adaptive management plan: The second is a management plan that would be used to inform how and when infrastructure should be moved eastward.

On June 20, 2023, city staff presented three options for how the road could be reconfigured to move infrastructure away from the coast. The City Council voted to approve one of the options to proceed to the next stage of design, in compliance with the grant requirements.

At that meeting, the City Council also directed staff to return to the Beach Preservation Commission and the City Council to discuss options for the management plan. One option is to “retreat now,” meaning make all the changes all at once. The other is to use a phased approach where changes would be made incrementally over the next 96 years, as needed. Staff will present this information to the City Council on April 23, 2024.

The grant project was completed on Feb. 28, 2024. At this time, the city does not have an active project or funding to continue where the grant project left off. Because of this, it is not necessary to choose an adaptation approach now. If the City Council were to direct staff to proceed with the next steps of this project, staff would need to analyze additional information about the potential costs and benefits of the two approaches to help the City Council make an informed decision.

Explanation & Analysis

Project area flooding

South Carlsbad Boulevard has a history of erosion and instability near Las Encinas Creek. The city has had to close this section of the roadway, including at the Las Encinas Bridge, during

coastal storms, rendering this part of the coastline inaccessible. This poses a safety concern because emergency vehicles have to take a longer route to get to nearby homes and businesses and is an inconvenience to those traveling south along the coast.

In response to flooding, the city extended rock barricades twice under an emergency permit approved by the California Coastal Commission. Most recently in 2016, the city placed rock shoreline protection during periods of high surf that led to partial closure of the roadway and emergency repair work. The California Coastal Commission issued a coastal development permit on Dec. 29, 2015, which was extended in March 2024.

As a condition of the emergency permit, the Coastal Commission required the city to pursue a more permanent solution. The California Coastal Conservancy grant project provided the first step toward developing that solution.

Staff submitted an amendment request to the California Coastal Commission on March 14, 2024, for a five-year extension to pursue additional grants and studies to complete the design, permitting and construction of a lasting solution. If the extension is not approved and the rock barrier is removed prior to the realignment of the infrastructure, this segment of Carlsbad Boulevard would likely experience heavy erosions and would need to be closed once critically damaged.

Existing Policies and Plans

The city has been studying and planning for future sea level rise for many years. Specifically, the South Carlsbad Boulevard Climate Adaptation Project builds on data and guidance in three documents previously approved by the City Council:

1. Sea Level Rise Vulnerability Assessment

This report completed in 2017 identifies areas in Carlsbad on the coast and around lagoons that are most susceptible to damage from an increase in the sea level.

- The report projects potential hazards over two timeframes – through 2050 and 2100. It analyzes the relative risks and rates how vulnerable different areas are.
- The report also describes possible “adaptation strategies,” which are ways to help address future coastal flooding and erosion.
- The project area is identified in the report as an area that may be extremely vulnerable to coastal flooding.

2. General Plan Safety Element

In January 2024, the City Council approved an update to the General Plan’s Safety Element, which identifies community safety risks and establishes goals and policies to protect the public from those risks. The Safety Element sets forth several goals related to safety along the coast:

- Give priority to non-structural shoreline protection options and limit or prohibit hard shoreline protective devices (Goal 6-P.15)
- Require removal or relocation of structures away from sea level rise hazards if public health and safety risks exist, if essential services can no longer be maintained, if the structures are no longer on private property due to migration of the public trust

boundary, or if the development requires new or augmented shoreline protective devices that would not otherwise be permitted (Goal 6-P.16)

3. Declaration of a Climate Emergency

In September 2021, the City Council declared a climate emergency, which is part of a worldwide effort to raise awareness of the impacts of climate change and instill a greater sense of urgency to address it. The declaration affirms the city's current sustainability efforts and ongoing commitment to protecting the environment stating, "any meaningful action that stands a chance of success at mitigating and adapting to the effects of climate change requires mobilization without delay."

What the Grant Project Included

City staff completed the following work products as part of the grant project:

- A conceptual design of the realigned roadway (Exhibit 1)
- An adaptive management plan that includes a decision framework for when to move segments of south Carlsbad Boulevard based on the anticipated coastal hazards caused by sea level rise (Exhibit 2)
- A cliff erosion assessment
- A habitat restoration analysis of the Las Encinas Creek area

The cliff erosion assessment and the habitat restoration analysis helped inform the road design and management plan.

Conceptual design

City staff developed conceptual designs, which included rough layouts and traffic analysis information to show how southbound Carlsbad Boulevard from Manzano Drive to Island Way could be moved to the east. The designs were developed to meet the following goals:

- Move and protect infrastructure from hazards caused by sea level rise
- Provide a safe and efficient roadway for all modes of travel
- Promote walking, biking and other forms of active transportation
- Slow down traffic along the coastline for safety

On June 20, 2023, city staff presented three road options to the City Council for consideration.

- The City Council selected a two-vehicle lane road with roundabouts.
- This design complies with the California Complete Streets Act and local policies that were previously approved by the City Council, including the General Plan's Mobility Element, Sustainable Mobility Plan and Climate Action Plan.

Management plan

In addition to a road design that moves infrastructure away from the coast, the grant funded the development of a plan for how and when these changes could be made.

A future step will include a policy decision regarding two options presented in the adaptive management plan:

Retreat now

- The “retreat now” option would move infrastructure away from the coast all at once, rather than incrementally, which could enhance the width of the beach at the Las Encinas Creek outfall segment.

Phased adaptation

- The phased adaptation option would move the southbound Carlsbad Boulevard vehicle lane to the east and repurpose the old road for walking and biking paths to be used as long as it is safe to do so.
- The walking and biking paths would be moved to the east as needed based on flooding, erosion and other signs of sea level rise over the next 96 years.

Project Segments

The management plan splits the project area into four segments. For each segment, the plan includes:

- Types of physical events, or “triggers,” such as cliff erosion or flooding and the frequency that would signal the time to move infrastructure landward
- Lead times needed for these actions
- Observational data to collect to track the proposed “triggers”
- Frequency of data collection

Each segment has unique characteristics that would determine when infrastructure would need to be relocated.

Climate adaptation segments



Palomar Airport Road

The main vulnerability of concern in this segment is cliff erosion. The phased adaptation plan would narrow and eventually relocate the proposed trails over time with the goal of keeping this mobility corridor in close, but safe, distance from the ocean to maximize coastal views from the trails.

The conditions described below would trigger the need to proceed with moving infrastructure to the east.

Trigger	Action	Lead time
Pedestrian walkway 15' from cliff edge	Begin planning and implementation of corridor shared by bikes and pedestrians (similar to area like the Coastal Rail Trail)	3-5 years
Bikeway 15' from cliff edge	Begin planning and implementation of relocating the trail inland or demolish corridor and redirect bikes and pedestrians to the sidewalk and bike lane next to vehicle lane	3-7 years
Relocated bikeway 15' from cliff edge	Begin planning and implementation of demolishing corridor and redirect bikes and pedestrians to the sidewalk and bike lane next to vehicle lane	3-5 years

Solamar Drive

The main vulnerability of concern in the Solamar Drive Segment is also cliff erosion. The phased adaptation plan would focus on utilizing the roundabout as long as feasible with options to explore increased access and stabilization (i.e. erosion control) alternatives as well as changing the roundabout to a signal to regain some space.

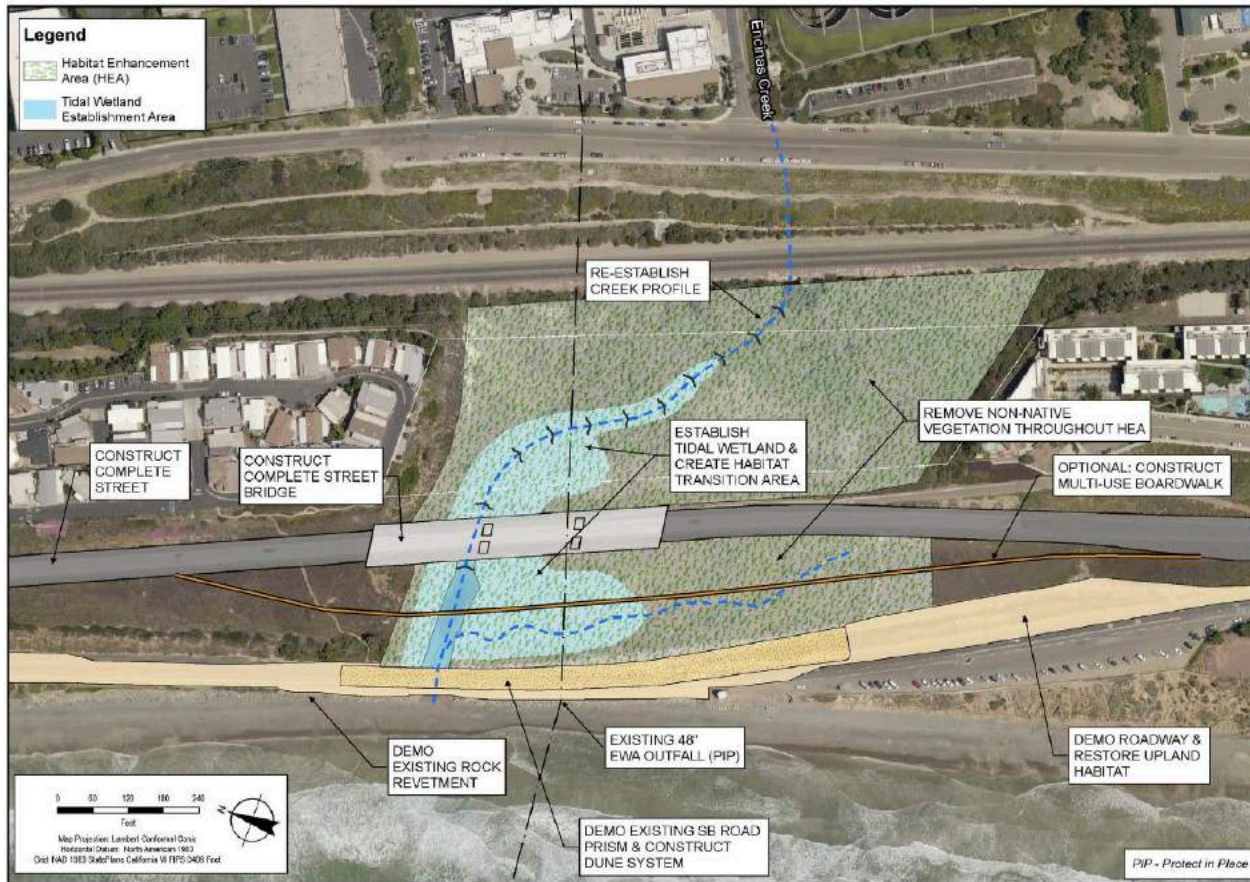
Trigger	Action	Lead time
Class 1 path 15' from cliff edge	Begin planning and implementation transitioning the roundabout to a single lane with traffic signal	5-10 years

Las Encinas Creek

In the Las Encinas Creek segment, flooding at the “dip in the road” at the mouth of Las Encinas Creek is the primary concern. Flooding in this portion of the segment is already affecting the roadway during coastal storms.

The image below shows what this area would look like under retreat now, once all the changes had been made, including totally removing the southbound road, as well as the rock barriers (called a “revetment”) along the beach.

- The changes would also include habitat restoration and a new bridge over Las Encinas Creek to accommodate north and southbound traffic, including walking and biking paths.
- The changes would create conditions that support the formation of an approximately 700-foot pocket beach with sand, as well as a sand dune and dune wetlands.
- The Las Encinas Creek estuary and beach would be allowed to evolve naturally and without major maintenance after the project is constructed.



A phased approach to this segment would be based on the following conditions:

Trigger	Action	Lead time
Rock revetment needs significant repair that exceeds \$5 million	Begin planning and implementation of demolishing corridor and redirecting pedestrians and bikes to sidewalk and bike lane next to vehicle lane	5-10 years
The corridor is flooded 10 times in one year	Begin planning and implementation of demolishing corridor and redirecting pedestrians and bikes to sidewalk and bike lane next to vehicle lane	5-10 years

Section 4.3.3.2 of the report includes a preliminary comparison of the phased adaptation and retreat now (make all the changes at once) options. Further analysis is needed prior to staff recommending an approach on “retreat now” or “phased adaptation” options. This analysis would include a geotechnical report, biological survey, topographical analysis, refined conceptual designs, cost estimates based on the additional studies, and an options analysis including costs and benefits.

Island Way

Trigger	Action	Lead time
No trigger identified since relocated infrastructure outside of the coastal hazard zone	N/A	N/A

A Caveat

Carlsbad's adaptive management plan is one of only a few plans created for coastal cities in the State of California. As such, best practices for creating such a management plan may evolve, providing additional guidance in the future.

Community Engagement

Because the grant project was technical in nature and the end product would be conceptual only, the city engaged property owners, businesses and residents in the immediate study area in a discussion about road design options.

City staff focused the adaptive management plan engagement efforts on public agencies including the California Coastal Commission, California State Parks and Encina Wastewater Authority. Comments included:

- Adding in a buffer for the cliff erosion trigger
- Using more objective metrics to monitor flooding and overtopping
- Making triggers clearer and more accountable
- Updating the adaptive pathways visuals to make them easier to understand
- Considering future financial needs related to adaptation

Staff incorporated these edits into the adaptive management plan included in Exhibit 2.

Staff recommend broader public engagement to coincide with future phases of this project, if it were to move forward.

Next Steps

The grant focused on a conceptual design. Completing the preliminary design and permitting for this project by 2028 is a key task in the City Council's 5-Year Strategic Plan. To meet this deadline and move this design forward to implementation, the following steps would be needed:

- Identification and securing of funding source(s)
- Procurement of design, environmental studies and options analysis including costs and benefits
- Public engagement to identify ideas, preferences and concerns related to how land could be repurposed
- Design of beach access points and other recreational areas
- Further technical studies and options analysis to support final design
- Engineering design beyond 30% through final design
- Environmental analysis, documentation and review
- Permitting

- Bidding
- Construction

Another consideration when determining next steps is the status of the larger south Carlsbad Boulevard project. The City Council may wish to consider changes to the 1-mile segment addressed in the grant project in context with the entire south Carlsbad Boulevard corridor.

That project is currently included in the city's Capital Improvement Program and initial community engagement has been completed. At this time, the City Council has not directed staff to proceed with the next steps, which would include preliminary design and engineering of the 3-mile corridor, along with additional community engagement.

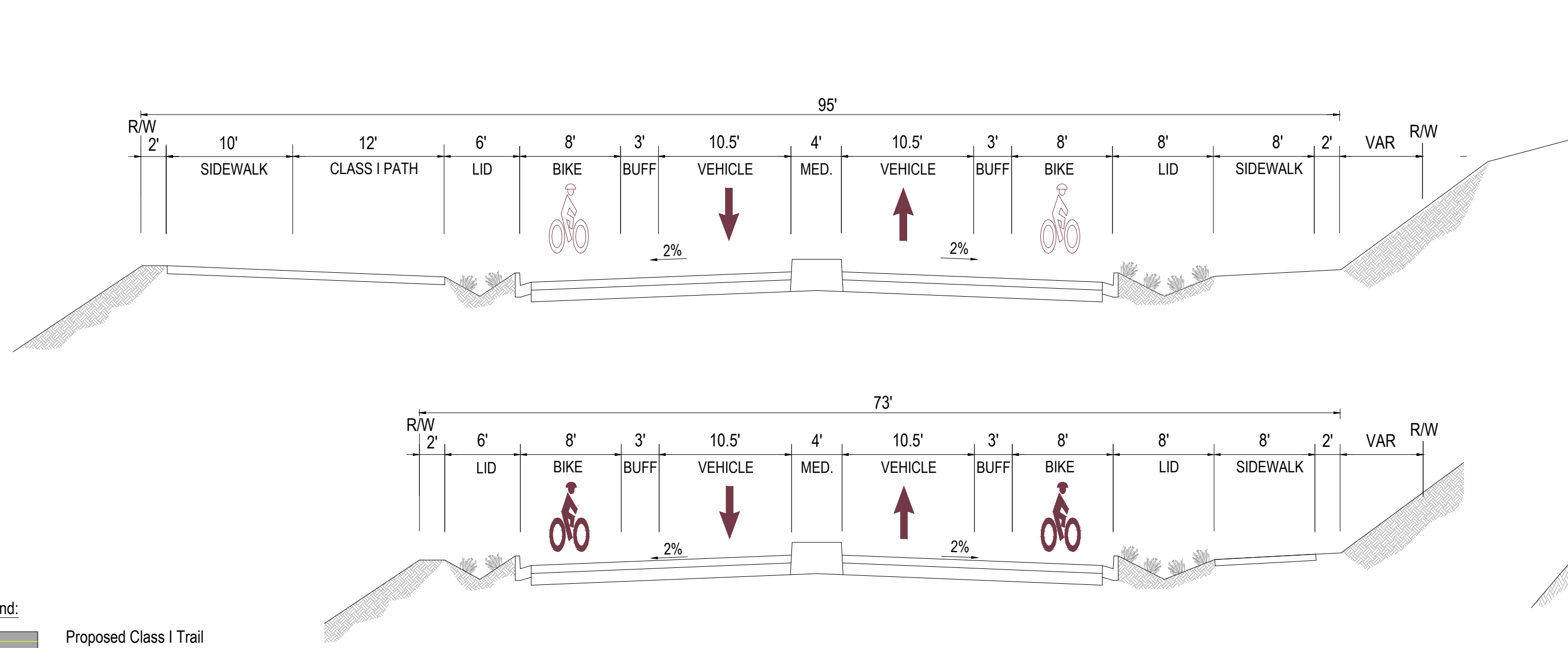
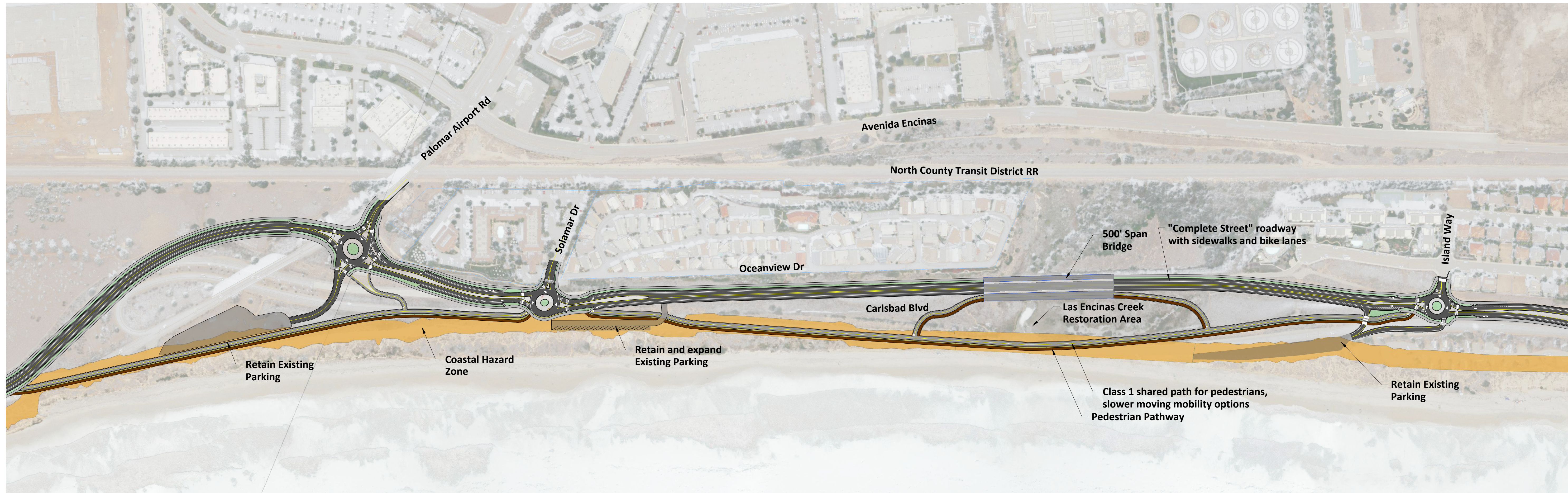
Environmental Evaluation

The California Environmental Quality Act, or CEQA, and its implementing regulations, the CEQA Guidelines, adopted by the Secretary of the California Natural Resources Agency, list classes of projects that have been determined not to have a significant effect on the environment and as a result are exempt from further environmental review under CEQA.

The City Planner has determined that this report is statutorily exempt from the requirements of CEQA pursuant to CEQA Guidelines sections 15262 (feasibility and planning studies) and 15378(b)(5), which exempts organizational or administrative activities of governments that will not result in direct or indirect physical changes in the environment. This organizational and administrative activity relates to results of a study to prepare an adaptation plan for a portion of a roadway segment in the city (South Carlsbad Boulevard Climate Adaptation Project). This general direction provided by the City Council does not have a legally binding effect on any possible future discretionary action. Public input received and technical information prepared during the planning process will be utilized in preparing a future environmental review document to support the South Carlsbad Boulevard Climate Adaptation Project.

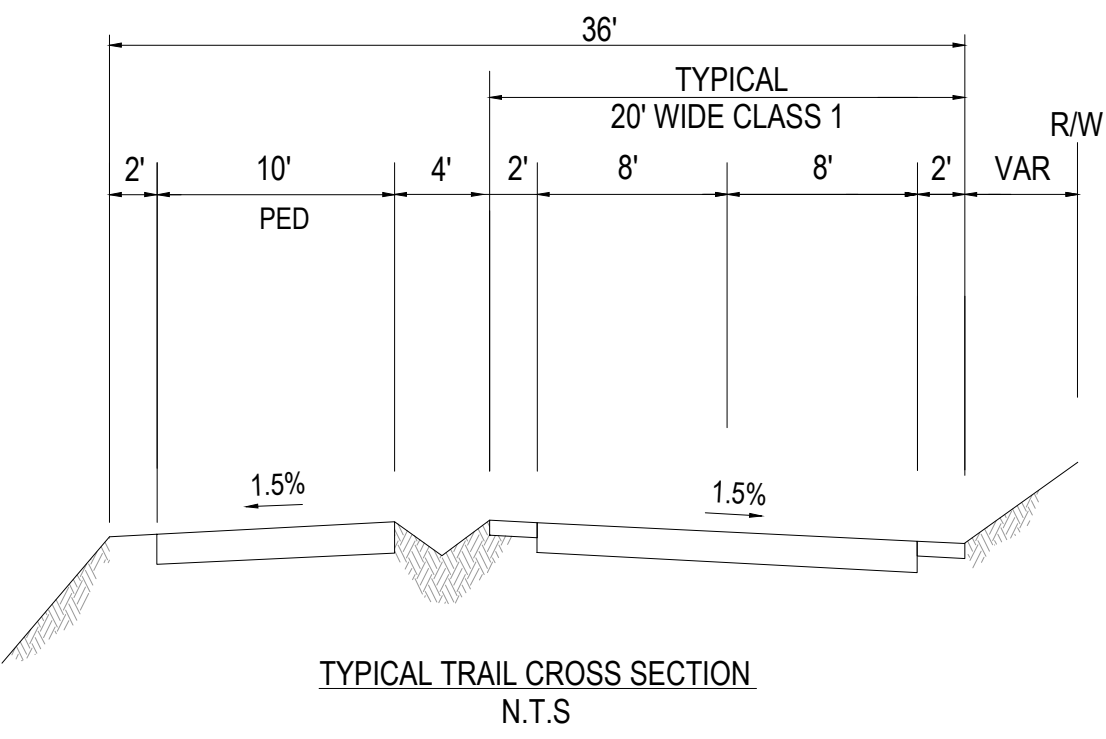
Exhibits

1. Conceptual design of the two-lane road with roundabouts
2. Adaptive management plan

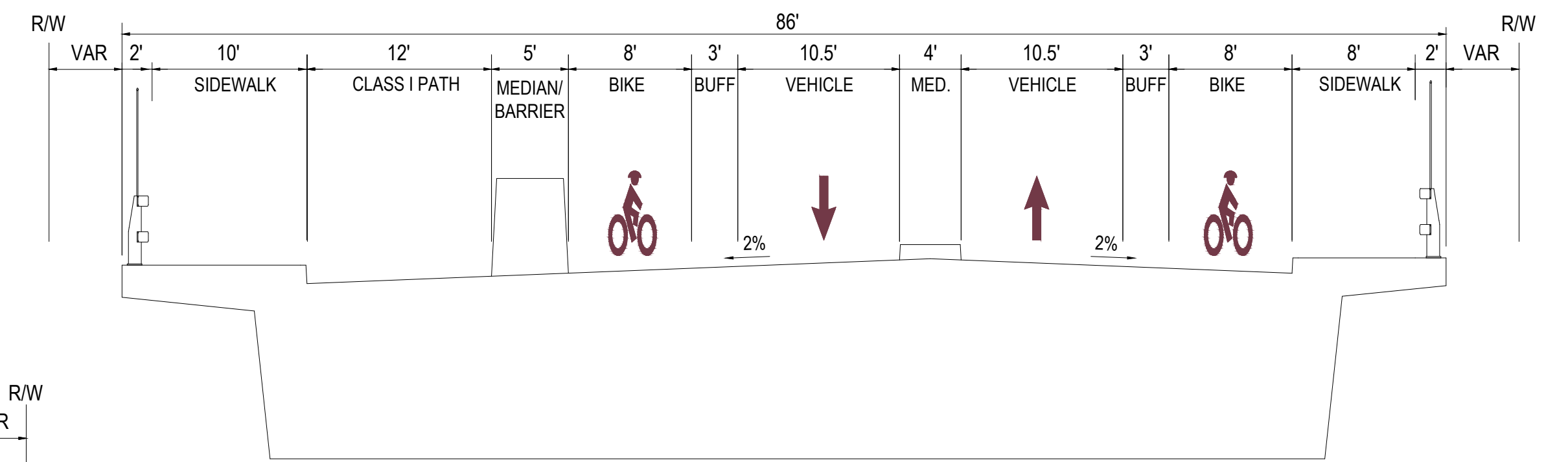


TYPICAL ROADWAY CROSS SECTION
N.T.S

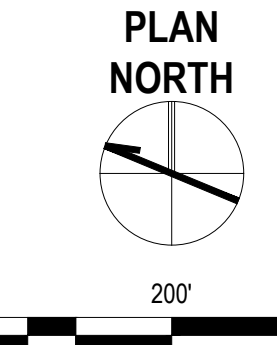
Note:
1. GHD conceptual design developed from City of Carlsbad provided topography. Roadway design components will need to be modified in future phases of the project to coincide with final surveyed topographic and parcel line information.



TYPICAL TRAIL CROSS SECTION
N.T.S



TYPICAL BRIDGE CROSS SECTION
N.T.S



- Legend:
- Proposed Class I Trail
 - Proposed Pedestrian Pathway
 - Proposed Roadway
 - Proposed Bridge
 - Coastal Hazard Zone
 - Landscape Areas
 - Property Line

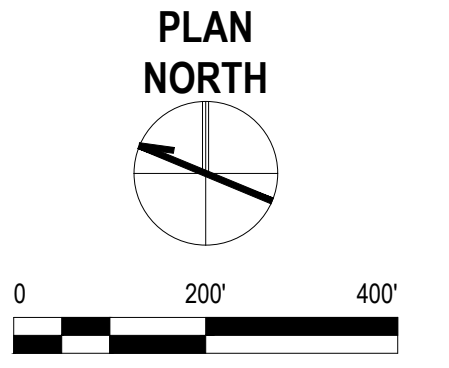
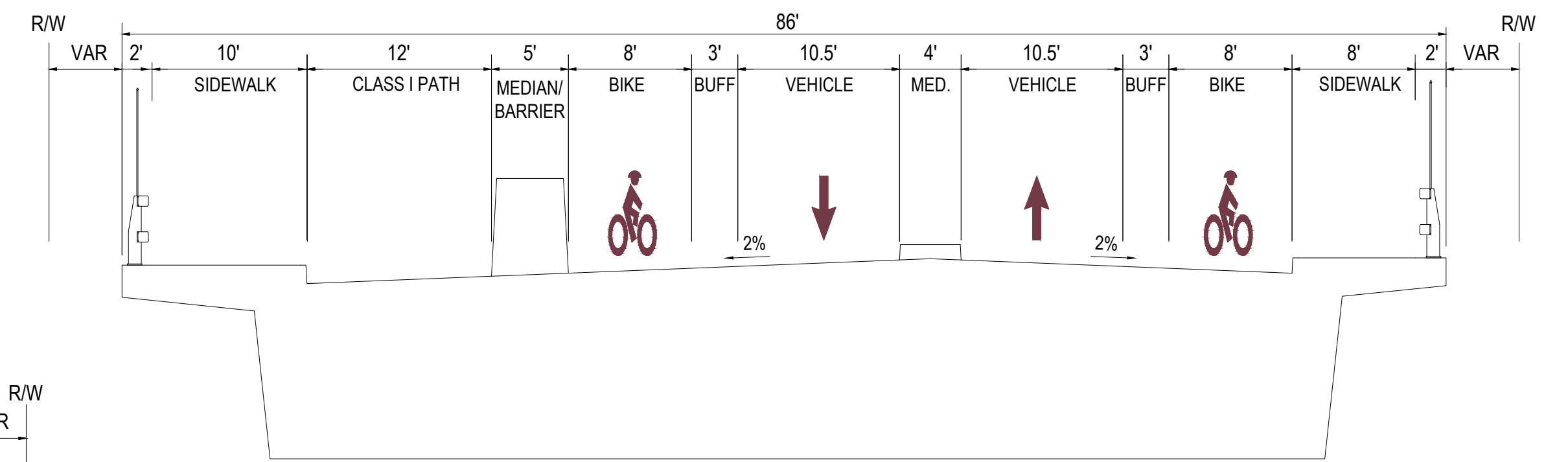
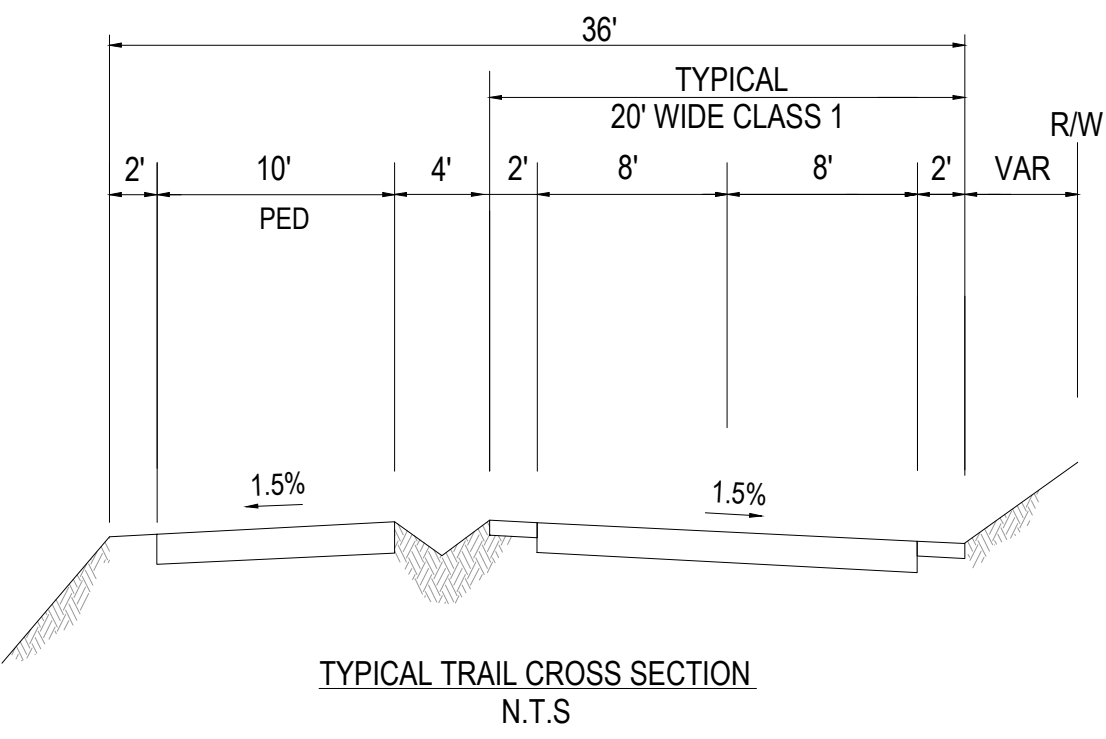
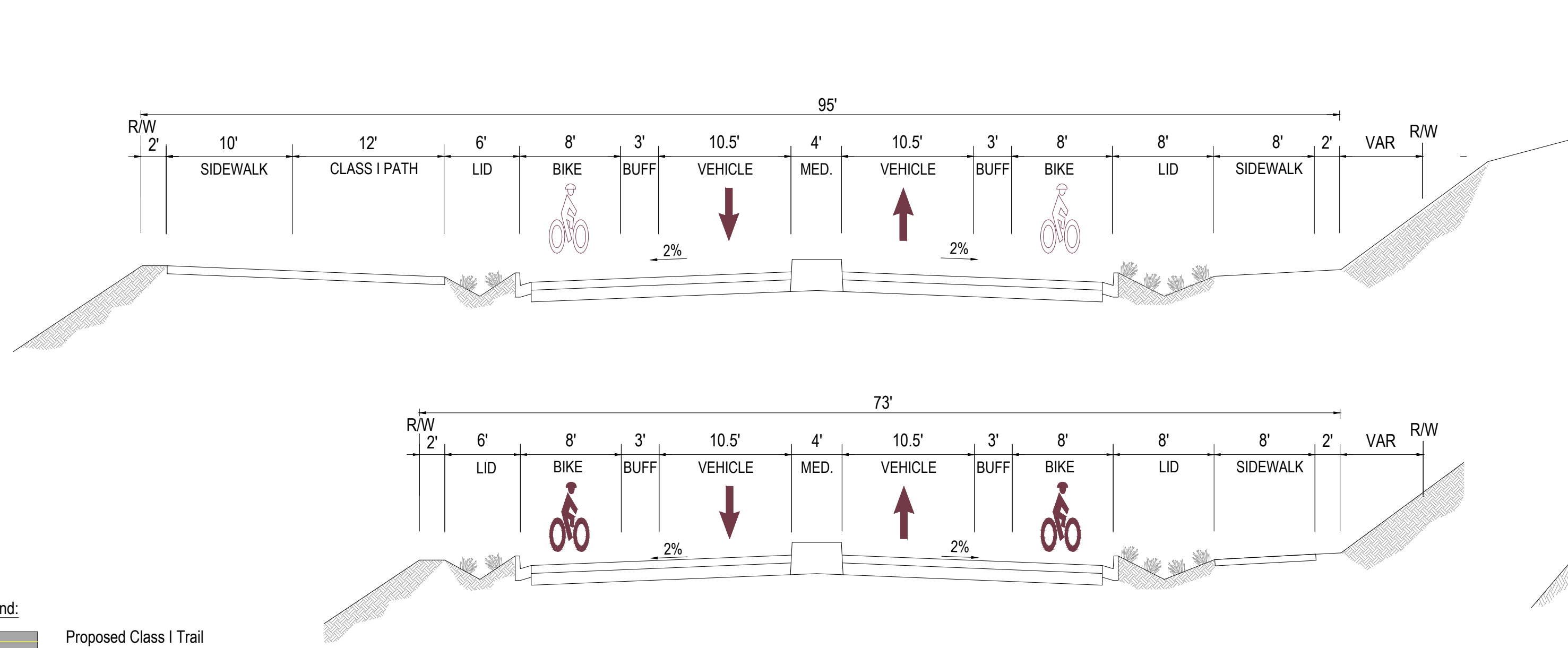
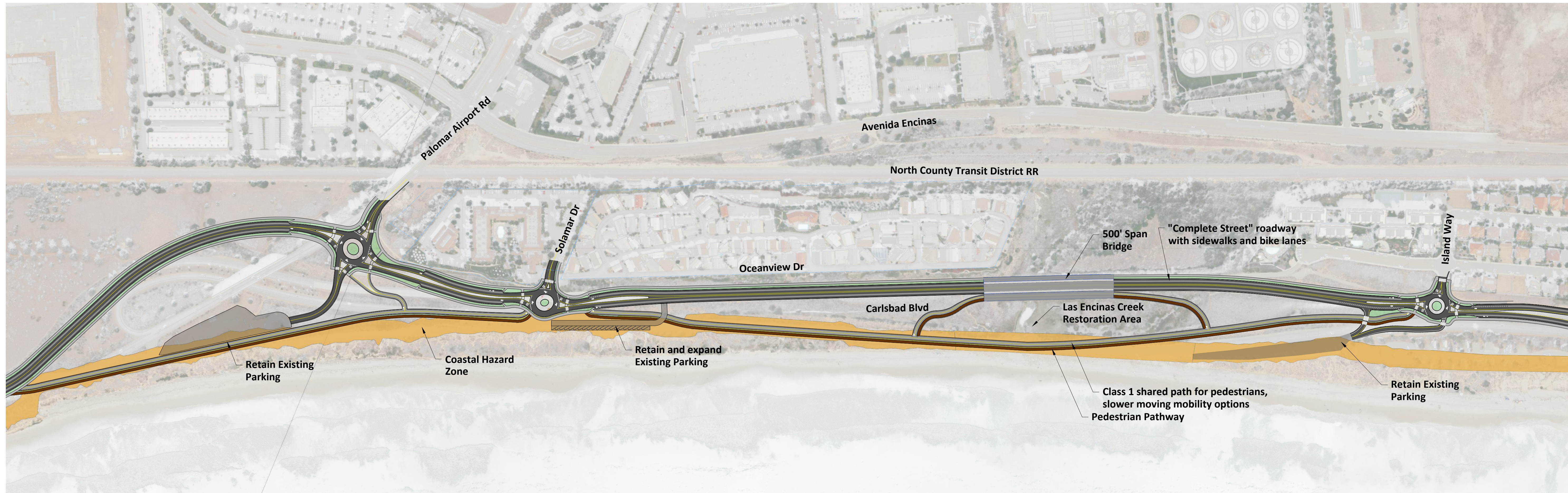
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SUBMITTED: _____ PROJECT MANAGER _____ DATE _____

DATE	INITIAL	REVISION	DESCRIPTION	DATE	INITIAL	DATE	INITIAL

SHEET #	CITY OF CARLSBAD ENGINEERING DEPARTMENT	SHEETS #
CARLSBAD BLVD RDWY RESILIENCY PLAN ALTERNATIVE 2 ROUNDAABOUT ALTERNATIVE		
APPROVED: _____		
OWN BY: _____	PROJECT NO. 11215903	DRAWING NO. FIG 1
CHKD BY: _____		
RVWD BY: _____		

FOR REVIEW ONLY



- Legend:**
- Proposed Class I Trail
 - Proposed Pedestrian Pathway
 - Proposed Roadway
 - Proposed Bridge
 - Coastal Hazard Zone
 - Landscape Areas
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Note:
 1. GHD conceptual design developed from City of Carlsbad provided topography. Roadway design components will need to be modified in future phases of the project to coincide with final surveyed topographic and parcel line information.

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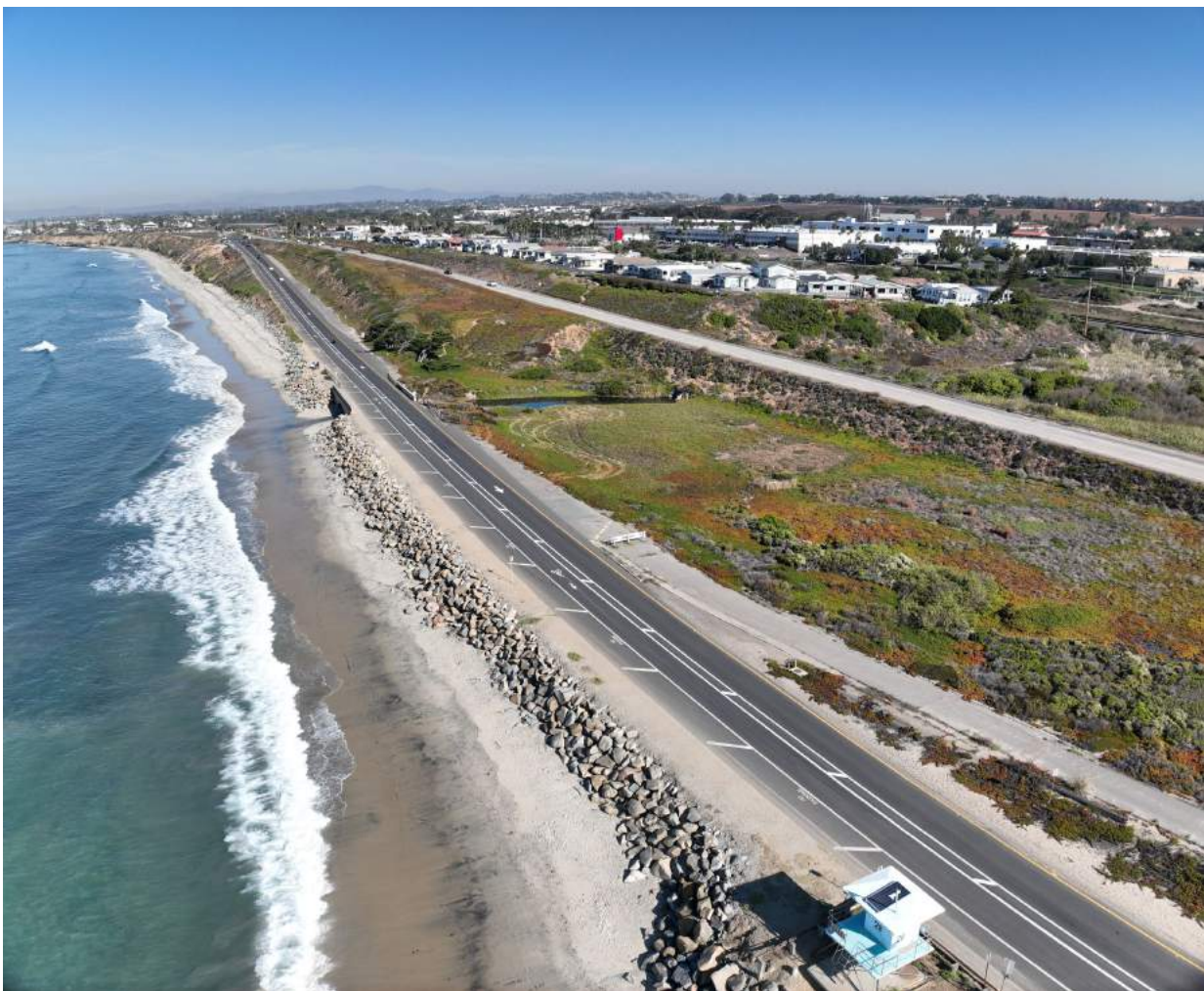
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South Carlsbad Climate Adaptation Project

Long-Term Master Plan / Adaptive Management Plan

City of Carlsbad

28 February 2024



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1. Introduction

Traffic safety and environmental sustainability are top priorities for the City of Carlsbad. A California State Coastal Conservancy grant provided the city with an opportunity to advance both priorities by redesigning a section of Carlsbad Boulevard prone to flooding and other coastal hazards. The grant is intended to demonstrate how coastal cities can move and adapt infrastructure based on the latest modeling of sea level rise (SLR).

The South Carlsbad Climate Adaptation Project seeks to move the southbound lanes of Carlsbad Boulevard from Manzano Drive to Island Way to the east and repurpose city-owned land for other public uses and environmental restoration areas. The uses for this space and the future alignment of the road are focused on building resilience into the corridor with consideration of current and projected future coastal hazards; specifically, SLR and cliff/shoreline retreat over the next 100 years.

To meet these objectives, the proposed project involves a complete street to include coastal trails, bikeways and sidewalks that provide access to the coastline and community vision spaces (Figure 1). Complete streets are streets that are safe and inviting for all users, including people of all ages and abilities, regardless of whether they are driving, biking, or walking. Additionally, the project involves the use of nature-based design techniques and achieving habitat restoration where viable and appropriate – such as within the Las Encinas Creek area.

This Long-term Master Plan / Adaptive Management Plan (plan) was prepared to inform the management of the project elements over time in what is envisioned to be a phased plan in response to future coastal hazards. The plan presents physical thresholds for management actions (such as moving infrastructure elements landward) as coastal hazards impact and make coastal spaces unsafe for the public to recreate in.

It is important to note that the project design is still in the conceptual engineering phase (30% design) at the time of this plan's development. This plan may require revision during the final engineering and environmental phase to reflect any design changes that emerge.



Figure 1. South Carlsbad Boulevard Climate Adaptation Project Area

2. Proposed Project

A preferred option was selected by the Carlsbad City Council on June 20, 2023, that balances the project goals of improving mobility and coastal access, while reducing the risk of infrastructure to hazards and increasing resilience to the corridor by moving infrastructure inland and out of coastal hazard zones. The primary elements of the project are to: 1) create a complete street along the existing northbound Carlsbad Blvd alignment; 2) enhance traffic circulation and safety through three roundabouts; 3) restore habitat and promote wildlife connectivity in Las Encinas Creek through construction of a 500' span bridge along new complete street; and 4) increase mobility through creation of a Class 1 bikeway facility and complete street elements on Carlsbad Blvd. The proposed project and primary components are shown in plan and section in Figures 2 through 4. Details on adaptation considerations for specific assets along the project area are further described in this report in Section 4.3.

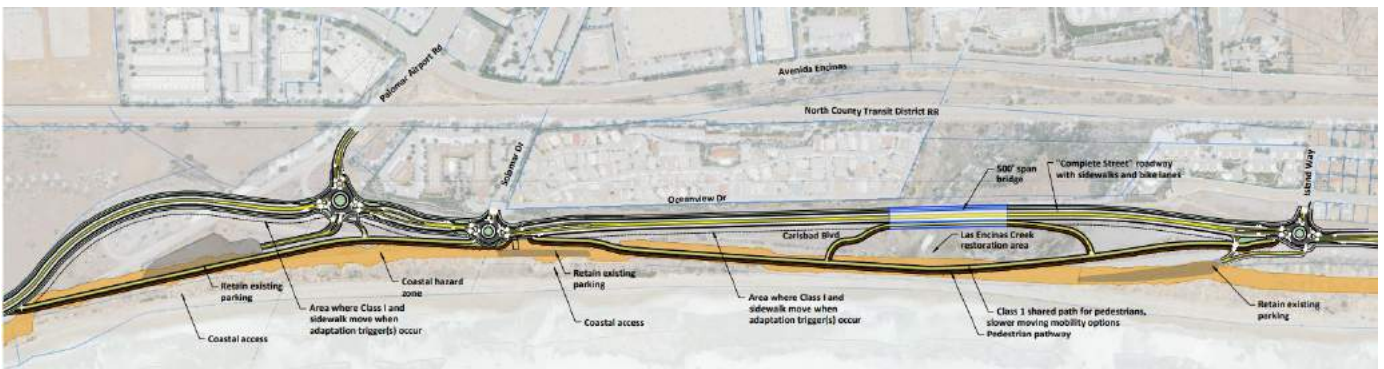


Figure 2. Preferred Project

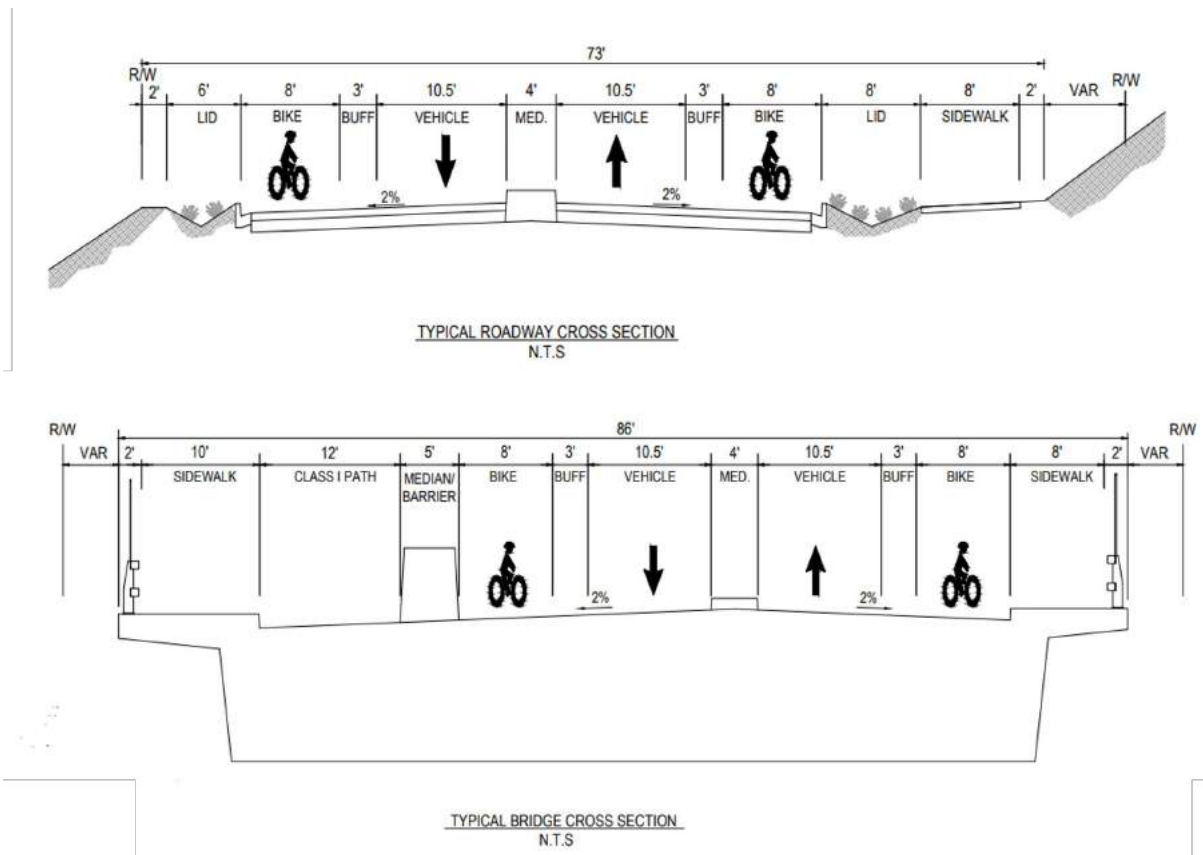


Figure 3. Typical Roadway (above) and Bridge (below) Cross Sections

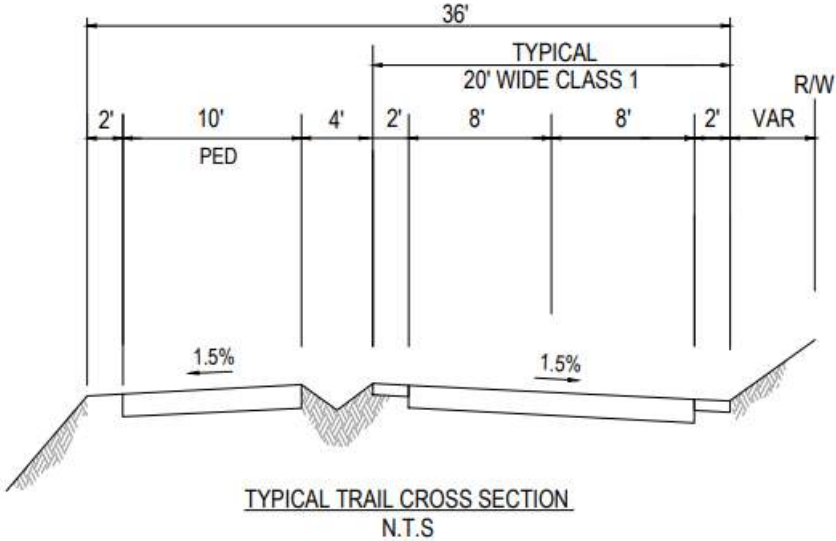


Figure 4. Typical Mobility Corridor Section

3. Coastal Hazards

Coastal flooding and cliff erosion are the primary hazards that present vulnerabilities to the project site. These coastal hazards have required temporary roadway closures and the installation of rock revetment along 1,300 LF of southbound Carlsbad Blvd. Assessment of future coastal hazards driven by climate change and SLR indicate that both flooding and erosion will increase over time, causing additional impacts to access and usability of infrastructure without the interventions proposed by the project and presented in this plan. The impacts from these hazards are the focus of the adaptive management principles identified in this plan. This report summarizes information on hazards with detailed analysis available in the Cliff Erosion Assessment Report and Coastal Hazards Memorandum.

3.1 Cliff Erosion

Currently, cliff erosion presents a significant hazard across the project area. Episodic cliff failure events have occurred within the project area which have led to substantial erosion (Photo 1). To understand the existing and projected future cliff hazards in the project area, Scripps Institution of Oceanography (SIO) conducted a study of cliff erosion. This study assessed existing conditions, developed historic retreat rates, and projected cliff positions with SLR rates consistent with the Ocean Protection Council (OPC) 2018 medium-high scenario. This effort was undertaken by using four cliff evolution models and hundreds of model runs. All four models assumed erosion is primarily driven by wave action. It is important to note that other erosive processes, such as rainfall and groundwater, were not explicitly modeled though are generally captured in the historic retreat rates used as a baseline input for the models.



*Photo 1. Cliff Erosion within the Project Area near Palomar Airport Road (left) and Solamar Drive (right)
Source: Hayne Palmour IV (left), Sean Williams (right)*

To derive retreat rates and corresponding cliff edge positions from the SIO model results, statistics (i.e., mean, median, percentiles, max/min) were calculated for each model run corresponding to the years of interest (2030, 2050, 2070, 2100). The SIO study did not extend beyond 2100, thus projections of cliff retreat were forecasted to a line of best fit to estimate year 2120. A spatial representative of these projected cliff edge positions (i.e., cliff hazard zones) was created using the average distance of each model run for the years 2070 and 2120. These results are presented graphically in Figure 5 with the statistical mean (i.e., average) projections of cliff retreat distances from the baseline cliff edge highlighted. A cliff erosion hazard zone was created from the results of the SIO study and is overlain on the project site in Figure 6.

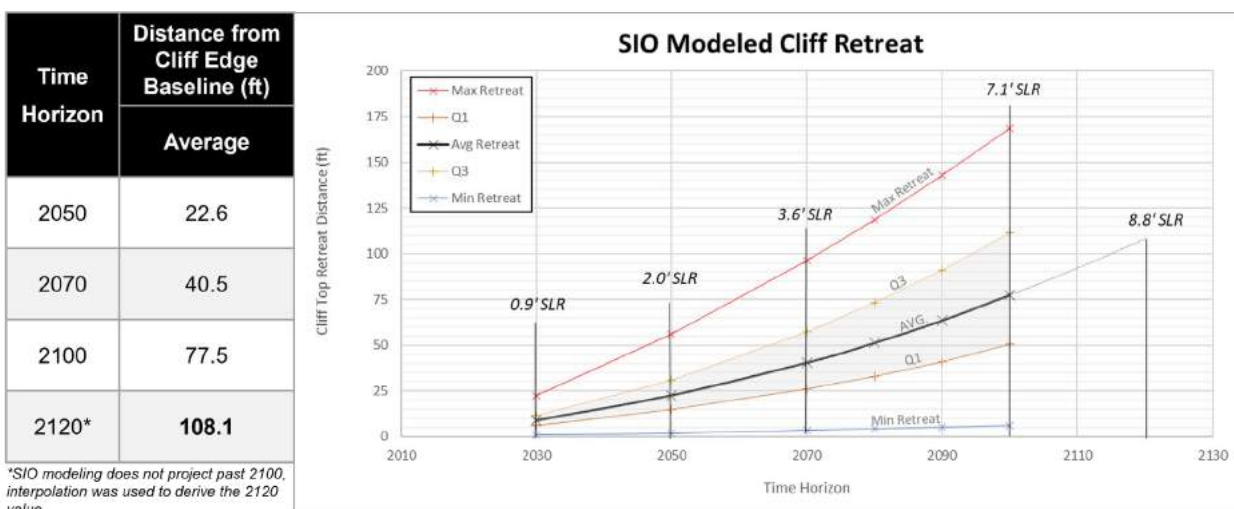


Figure 5. Modeled Average Cliff Retreat Distance in Tabular Format (left) and Graphical Format (right) (Derived from: SIO 2022)



Figure 6. Cliff Hazards in the Project Area with Sea Level Rise Projections for 2070 and 2120

3.2 Coastal Flooding

Coastal flooding is when water floods (short duration standing water) or inundates (long duration standing water) over typically dry land as a result of tides and waves. Coastal flooding of low-lying shorelines will increase in frequency and severity as sea levels rise. Coastal flooding was assessed within the project area using USGS's CoSMoS 3.0 under the year 2050 (3.3-ft SLR scenario) and the year 2100 (6.6-ft SLR scenario). Flood hazards are focused along the low-lying areas around Las Encinas Creek (Figure 7). This finding is consistent with existing conditions, as the roadway currently experiences overtopping and closures at this location during extreme waves coincident with high tide events (Photo 2).



Photo 2. Coastal Flooding within the Project Area (source: City of Carlsbad)

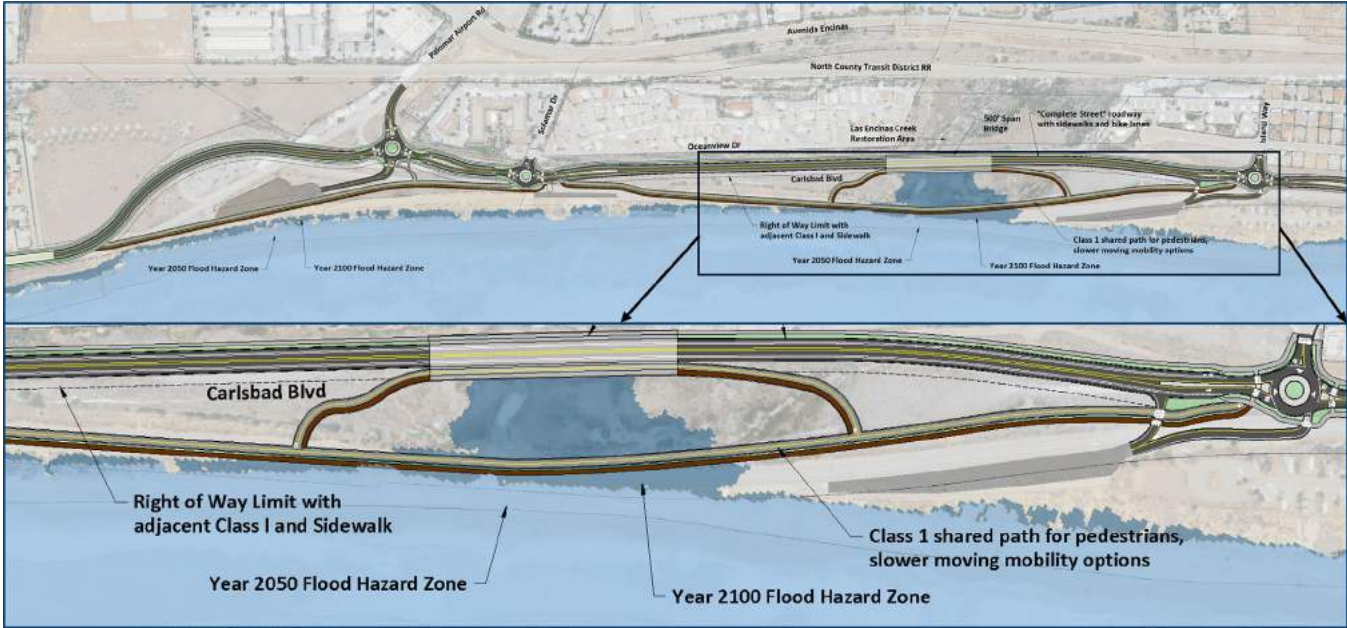


Figure 7. Coastal Flood Hazards in the Project Area – Entire Project area (top) and Las Encinas Creek (bottom) using CoSMoS 3.0 with 2050 – 3.3-ft SLR (light blue) and 2100 – 6.6-ft SLR (dark blue)

4. Adaptive Management Plan

An adaptive management approach will be used to inform project phasing over time with the overall goal of utilizing coastal spaces for public mobility and recreation until erosion or flooding make these spaces unsafe for the public to use. The Adaptive Management Plan presents adaptive pathways for each of the four project segments. These pathways outline a management and decision framework based on the coastal hazards that are anticipated to impact these areas over the next century. These pathways are comprised of monitoring thresholds for various metrics and management actions, which are described in detail in this section.

4.1 Project Segments

For the purposes of this Adaptive Management Plan, the project area was divided into four segments based on common vulnerabilities and how these infrastructure elements could be managed or adapted over time (Figure 8). These segments are described as follows:

1. Palomar Airport Road Segment - Encompasses the area from Manzano Drive to Palomar Airport Road. This segment includes the Turnarounds Parking Lot, owned by State Parks.
2. Solamar Drive Segment - Centered on the intersection of Solamar Drive and South Carlsbad Blvd. This intersection primarily serves as the main vehicular accessway for both the Solamar Community and Hilton Garden Inn. This segment also includes the City Parking Lot at Dave's Beach and the RC Flyers Lot.
3. Las Encinas Creek Segment - Centered at the Las Encinas Creek and includes the North Ponto State Beach Day Use Parking Lot.
4. Island Way Segment - Southernmost end of the project area that encompasses an intersection at Island Way located inland from the South Carlsbad State Beach Campground.

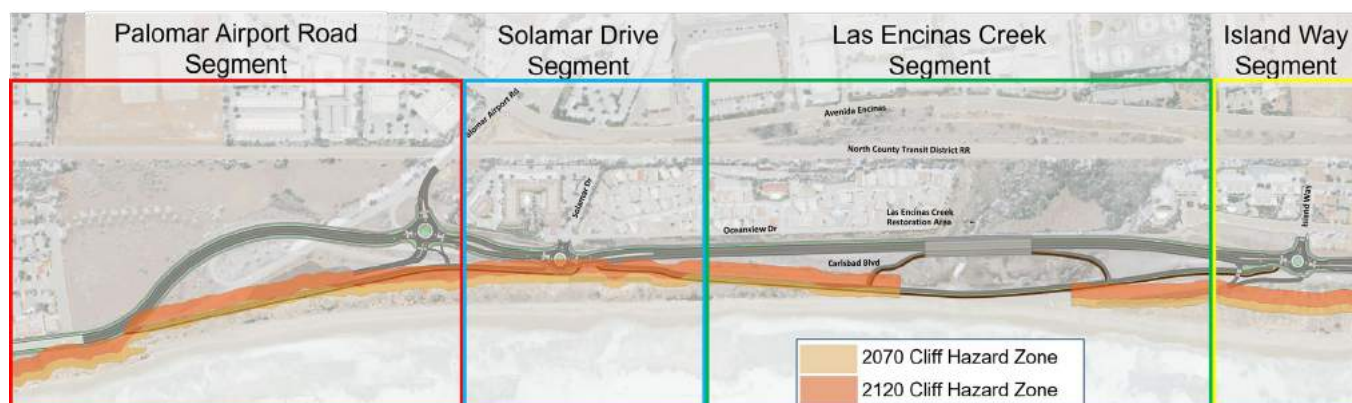


Figure 8. Adaptive Management Plan Project Segments

4.2 Selected Metrics & Thresholds

The physical metrics and thresholds that were selected to prompt management actions in the project area are tied to the vulnerabilities and public use of the site. The three selected metrics include: cliff erosion, coastal flooding, and armoring integrity. Example thresholds that would prompt adaptive management action for each of these metrics are provided below:

- Cliff erosion (e.g., cliff erodes within several feet from edge of buffer to bikeway),
- Coastal flooding (e.g., frequency of infrastructure flooding), and
- Armoring integrity (e.g., cost of maintenance and repair),

Site usability (by the public) was considered as a metric, however, to provide more objective thresholds it was not included as it was acknowledged that usability is captured indirectly across the other evaluated metrics. Further explanation of the thresholds selected for each of the metrics is provided in this section.

4.2.1 Cliff Erosion

The cliffs within the project area are vulnerable to erosion primarily as a result of waves attacking the cliff face, resulting in instability and surface runoff physically eroding the cliffs. For the purposes of evaluating metrics and setting thresholds for cliff erosion, both setback and buffer distances are being used. Cliff erosion setback refers to the distance from the top of cliff edge to a buffer. Recognizing potential safety concerns with infrastructure abutting a cliff edge, a cliff erosion buffer was applied as a threshold for management actions. Cliff erosion buffer refers to the distance from the setback to the asset (e.g., trail, roadway, etc.). These terms are illustrated schematically in Figure 9. By having the setback relate to the buffer allows additional time to plan management actions and safe use of the asset during that time.

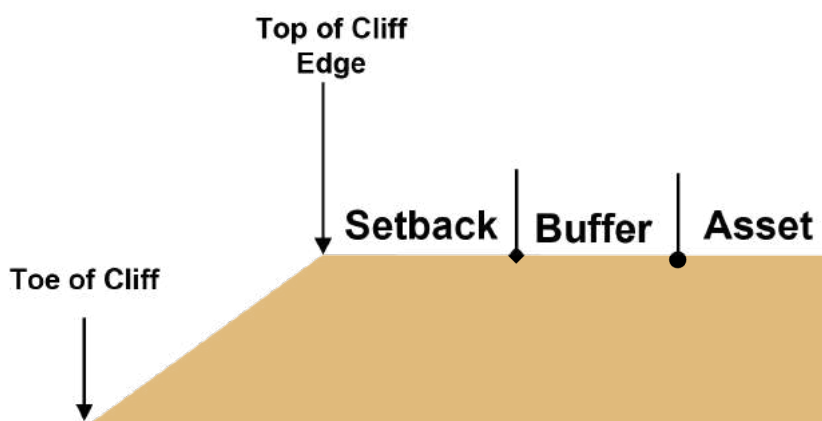


Figure 9. Diagram of Cliff Erosion Illustrating Specific Terms

The setback distance from the buffer to the top of cliff edge was selected as the most appropriate threshold for cliff erosion. To determine the appropriate setback distance threshold, the approximate lead times for the various management actions was discussed with city staff. Lead times for the relocation or realignment of proposed project infrastructure (primarily the bikeway corridor) ranged from three to 10 years across the segments. When comparing this to the localized cliff erosion projections (Figure 10) using the average cliff erosion, the 10-ft setback is projected to provide roughly 10 years of lead time between 2030 and 2090, and roughly five to seven years of lead time at the end of the century. This lines up with the expectations for planning, design, fundraising, and implementation of the management actions identified. A buffer distance of five feet was determined appropriate to allow for time and space for safe usage of the asset during lead times and allows for the uncertainties in the magnitude of future bluff failures.

10 ft Setback Increments Overlaid on SIO Modeled Cliff Retreat

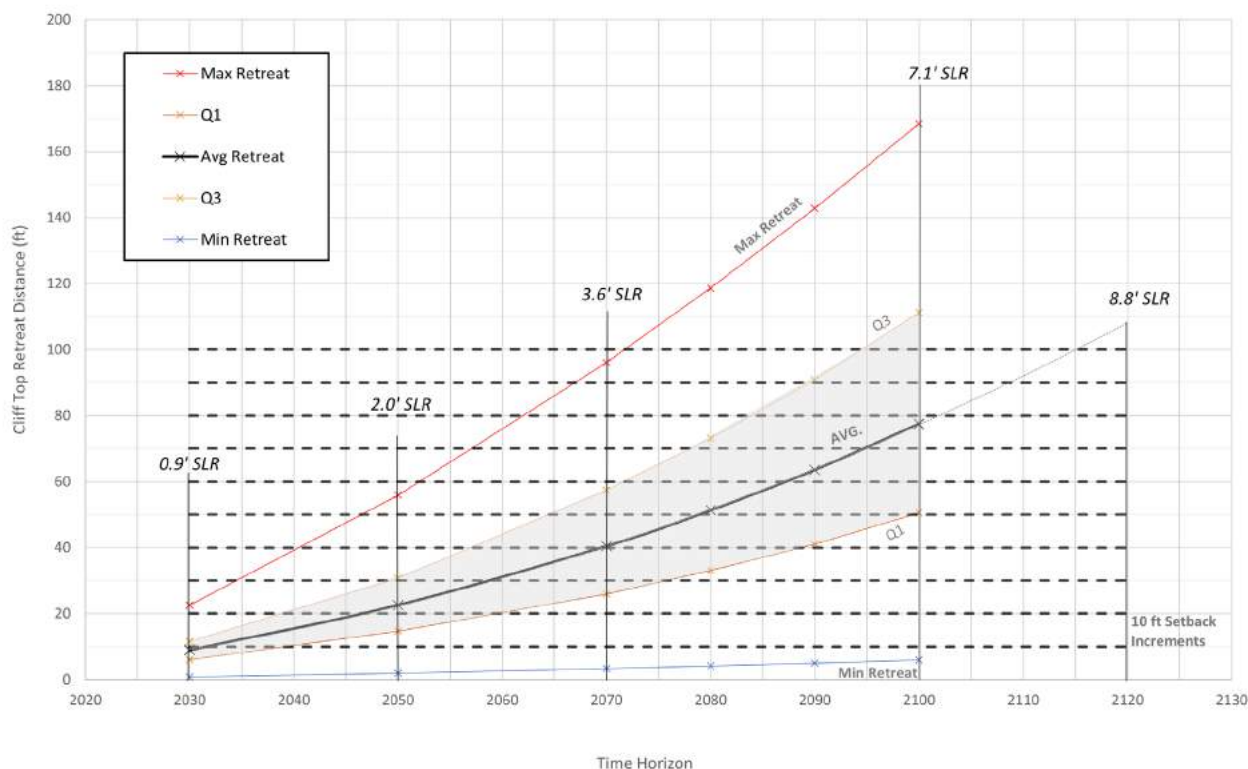


Figure 10. Increments of 10-ft Setbacks Across the SLR Projections of Cliff Top Retreat

4.2.2 Coastal Flooding

Infrastructure in the project area is vulnerable to coastal flooding as a result of the proximity to the ocean and the elevation of infrastructure in the Las Encinas Creek vicinity. Coastal flooding of public spaces is a safety hazard and can result in road closures. This metric consists of partnering with SIO to use combined tidal conditions (predictions and observations) and wave modeling outputs to determine and validate flood elevation thresholds (e.g., minor, moderate, significant) and track flooding over time. For example, some overtopping of the roadway that does not impact vehicular use could be considered minor flooding, while overtopping sufficient to close the roadway to vehicles could be considered significant flooding. The exact elevation and oceanographic conditions to define flooding thresholds will be determined and validated at a later date. This information could be added to the existing SIO website¹ and linked through a city webpage. Automated emails to city staff could be generated in anticipation of forecasted flood events. This could be supplemented with site observations captured during extreme events with a field sheet and/or photos. Based upon the current frequency of extreme flooding and overtopping observations, a flooding threshold was defined as significant flooding of infrastructure 10 times in one year (i.e., 12-month period). Once validated, this method could be used to identify and track these flooding events.

4.2.3 Armoring Integrity

Should the beach undergo significant erosion, the rock revetment currently stabilizing southbound Carlsbad Blvd will be vulnerable to damage, which could impact its effectiveness at protecting the roadway. Damage has been documented previously during the 2015-2016 El Niño event, which compromised the integrity of the roadway and required emergency repairs and road closures. The need to extend or repair a significant segment of rock revetment (i.e., 500 LF) was selected as the threshold for armoring integrity. A financial threshold was also selected alongside this that would be met if repair, maintenance, or damage to the rock revetment exceeds \$5M (2023 dollars) over two years (i.e., 24-month period).

¹ An example of this system for Imperial Beach is available here: <https://siocpg.ucsd.edu/data-products/coastal-focus-sites/ch-imperial-beach/ib-flood-forecast/>

4.3 Adaptation Pathways

This section presents the adaptive pathways for each of the four project segments. Each of the pathways presented begins with Phase 0, which is considered the constructed project as currently proposed. The pathways then propose a number of future phases (i.e., management actions) and the thresholds/triggers that would cause the city to begin planning or implementing that future project phase. Understanding that each management action takes several years to implement, appropriate lead times were incorporated into the pathways. These lead times were derived from conversations with city staff and based upon analogous projects that have been implemented in the city.

4.3.1 Palomar Airport Road Segment

The main vulnerability of concern in this segment is cliff erosion. Four potential phases have been identified in the adaptive management plan for this segment (Figure 11). The overall theme of these phases is to narrow and eventually relocate the proposed trails over time with the goal of keeping this mobility corridor in close, but safe, distance from the ocean to maximize coastal views from the trails.

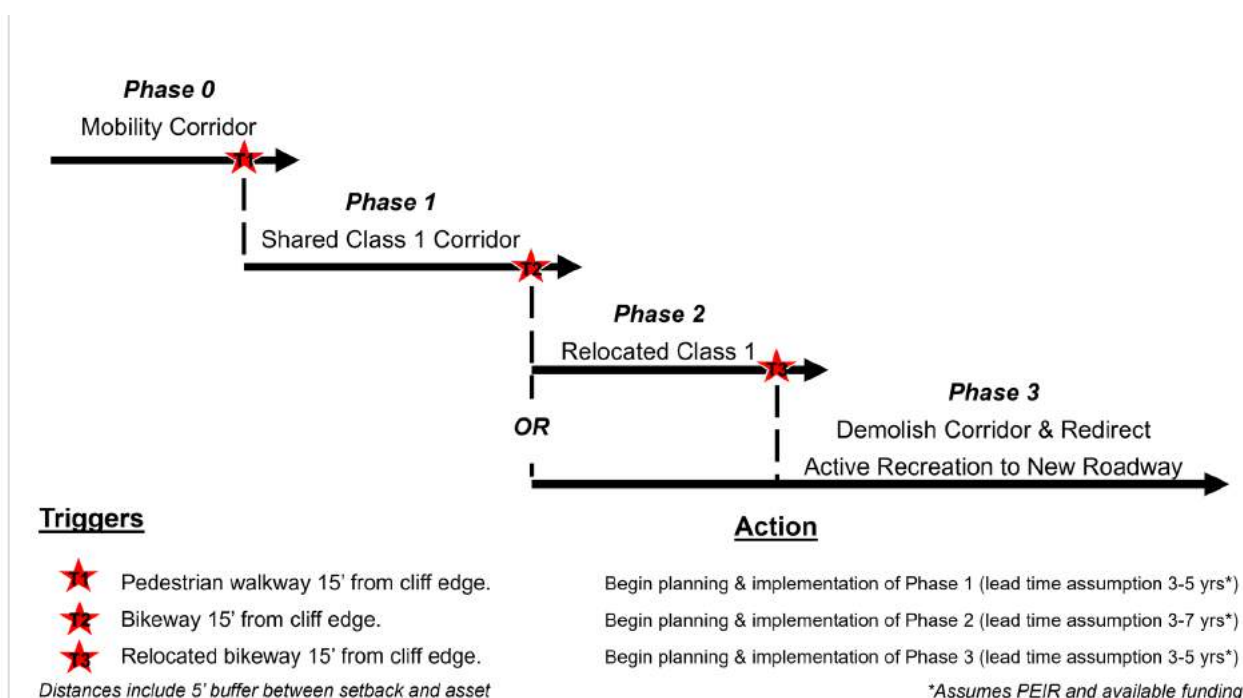


Figure 11. Adaptive Pathway for Palomar Airport Road Segment

The first line of infrastructure to be impacted by cliff erosion in the future would be the Class I pedestrian and bicycling trail in Phase 0, the as-built condition (Figure 12). The first adaptive phase is triggered once the cliff edge encroaches within 15' of the proposed pedestrian trail, which includes the 5' buffer. Phase 1 would then transition the pedestrian trail and bikeway into a shared use, Class 1 corridor (Figure 13). A combined pedestrian and bike corridor is a common configuration along the Coastal Rail Trail in North County San Diego, likely requiring a minimal learning curve for users as the pedestrians and bikes are merged into a single multi-use trail.

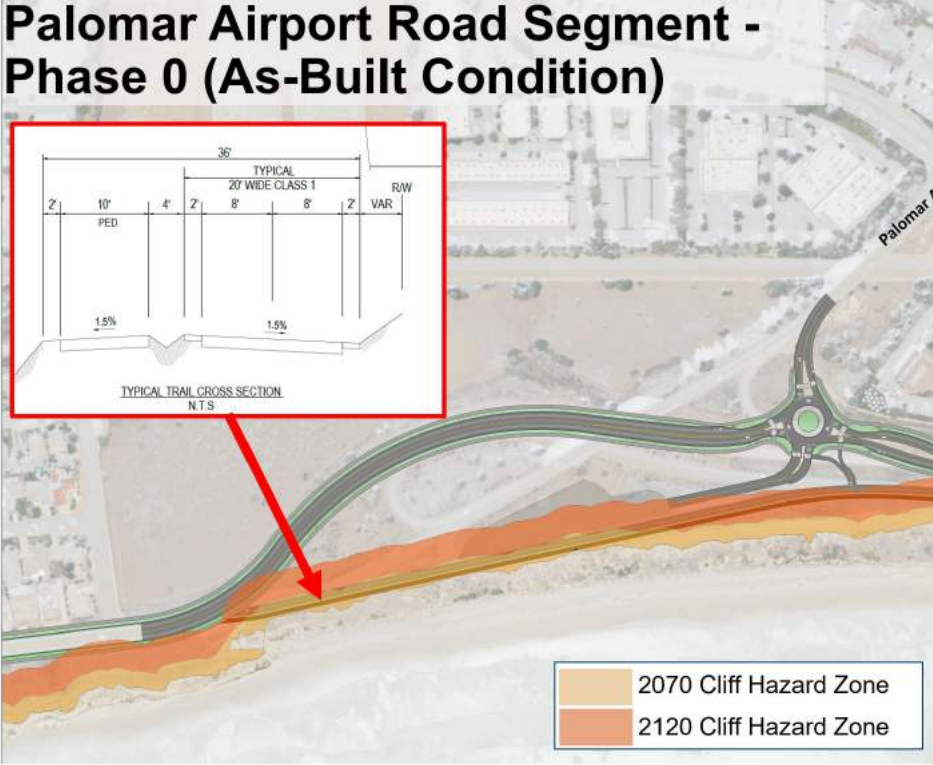


Figure 12. Phase 0 (as-built condition) of Palomar Airport Road Segment

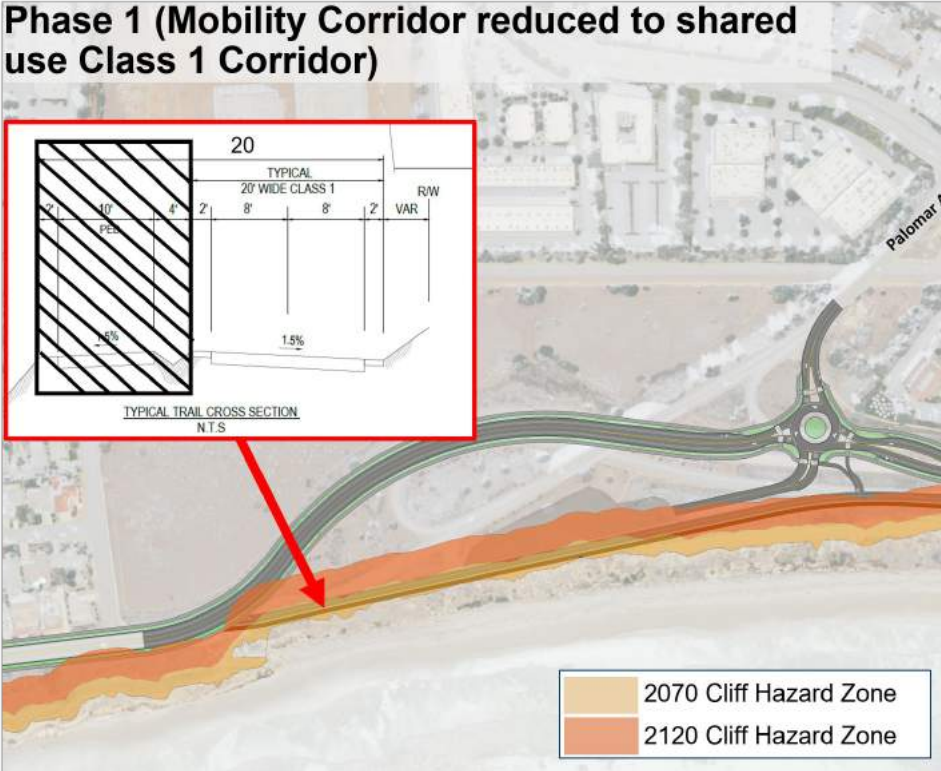


Figure 13. Palomar Airport Road Segment – Adaptive Phase 1

As the cliff top continues to erode and becomes within 15' from the shared use trail, the next phase would relocate the trail landward in incremental steps (Phase 2) (Figure 14). The relocated trails could be developed with low cost and less permanent materials, allowing for lower expenditure and increased flexibility in the modifications. As an

alternative phase to Phase 2 and/or when a trail would be infeasible, the city could decide to demolish the built trail corridor and redirect all active recreation to the proposed complete street roadway (Phase 3) (Figure 15).

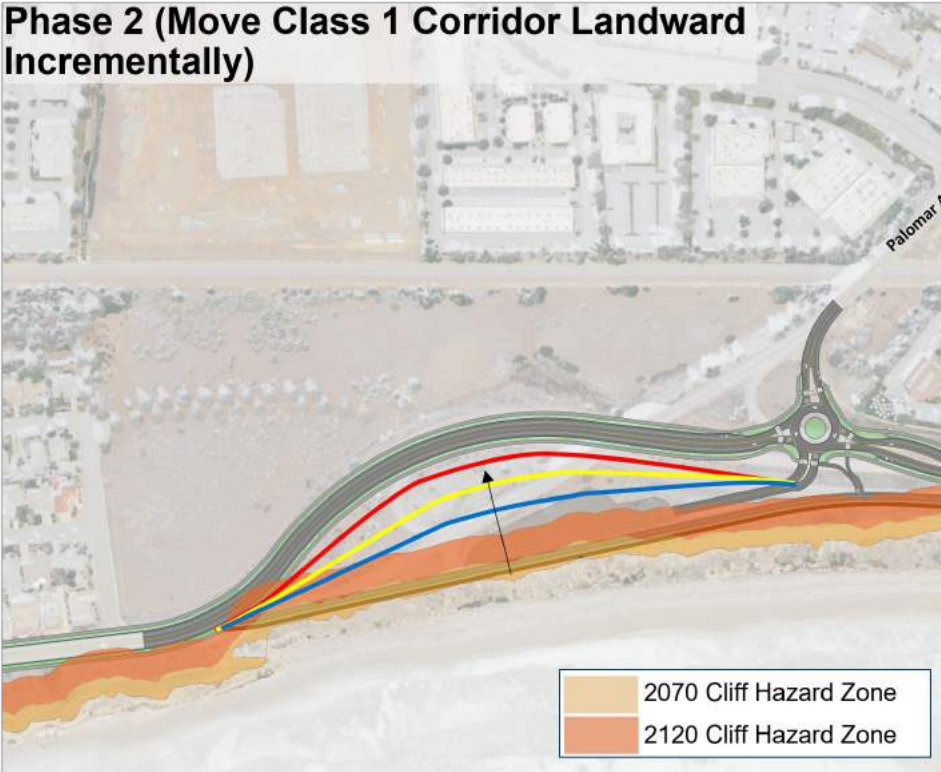


Figure 14. Palomar Airport Road Segment – Adaptive Phase 2

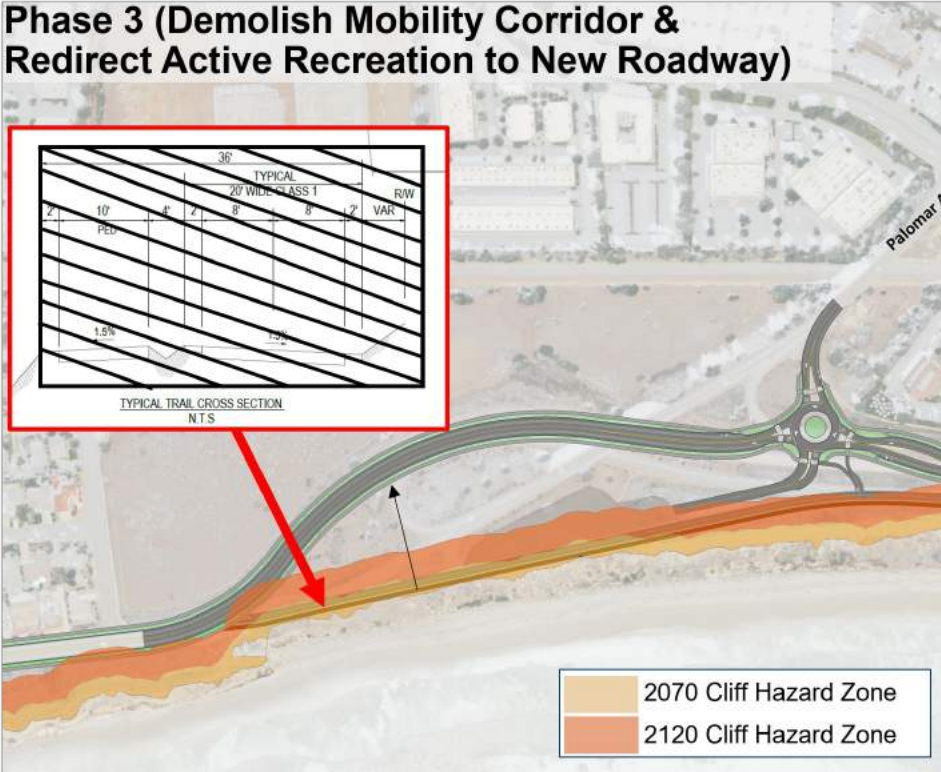
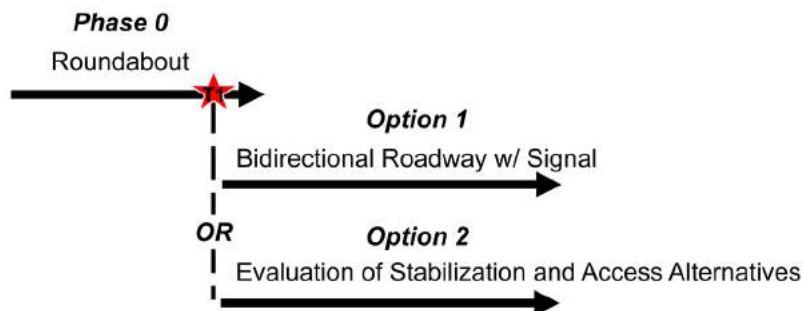


Figure 15. Palomar Airport Road Segment – Adaptive Phase 3

California State Parks owns and manages the land where informal parking occurs (commonly referred to as Turnarounds Lot). The city is actively coordinating with State Parks as part of this project; however, adaptation of the parking lot is not included in this Plan. Future phases of the project would provide more details on how the project interacts with this parking lot and how the parking lot could adapt over time.

4.3.2 Solamar Drive Segment

The main vulnerability of concern in the Solamar Drive Segment is cliff erosion. One phase with two potential options has been identified in the Adaptive Management Plan for this segment (Figure 16). The overall themes of these phases are to utilize the roundabout as long as feasible with options to explore increased access and stabilization (i.e. erosion control) alternatives as well as potentially changing the roundabout to a signal to regain some space.



Triggers

- ★ Class 1 Bikeway 15' from cliff edge. Begin planning & implementation of Phase 1 (lead time assumption 5-10 yrs*)
- Distance include 5' buffer between setback and asset* **Assumes PEIR and available funding*

Figure 16. Proposed Adaptive Pathways for Solamar Drive Segment

The first line of infrastructure to be impacted by cliff erosion in the future would be the pedestrian trail in Phase 0, the as-built condition (Figure 17). The 2070 Cliff Hazard Zone encroaches on the proposed pedestrian trail. By 2120, the Cliff Hazard Zone is projected to encroach to the middle of the proposed roundabout (Figure 17).

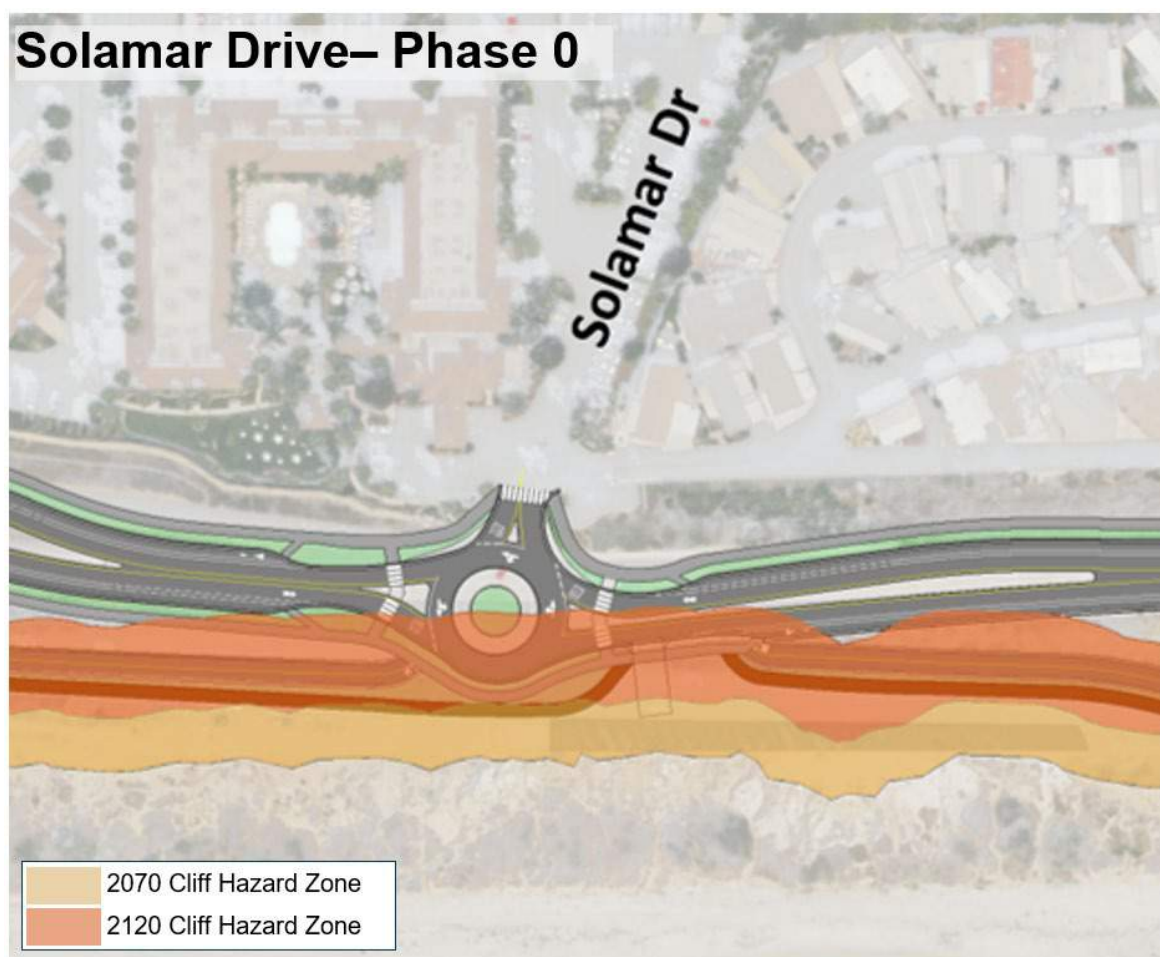


Figure 17. Phase 0 (as-built condition) of Solamar Drive Segment

Phase 0 (as-built) positions infrastructure as landward as possible to achieve the project goals. As the cliff erodes and encroaches on the roundabout, two options are available that would address the functionality and usability of the intersection and coastal resources. Option 1 would involve the planning and implementation of transitioning the roundabout to a signalized intersection that requires less space (Figure 18). Concurrently or independently to Option 1, Option 2 would explore cliff stabilization and erosion control techniques coordinated with a new formalized vertical access point to achieve multiple benefits at this location. For example, a wooden staircase, similar to nearby accessways, that blends into the coastal cliff landscape could be feasible at this location. An example of a nearby formalized cliff access point that could inform Option 2 is provided in Figure 19. This accessway would relieve the need for multiple desire paths that currently exist along the cliff face where beachgoers and surfers traverse down the cliff to reach the shore. A multi-benefit solution exists to provide cliff stabilization and erosion protection at the landing of this accessway on the beach. The erosion protection would be designed to the minimum necessary footprint and the accessway designed to allow safe and appropriate width access to the beach while increasing the stability of the cliff fronting the roundabout at Solamar Drive. Both Option 1 and Option 2 could be pursued once the cliff erodes within a distance of 15' from the vehicle lane which includes a 5' buffer.

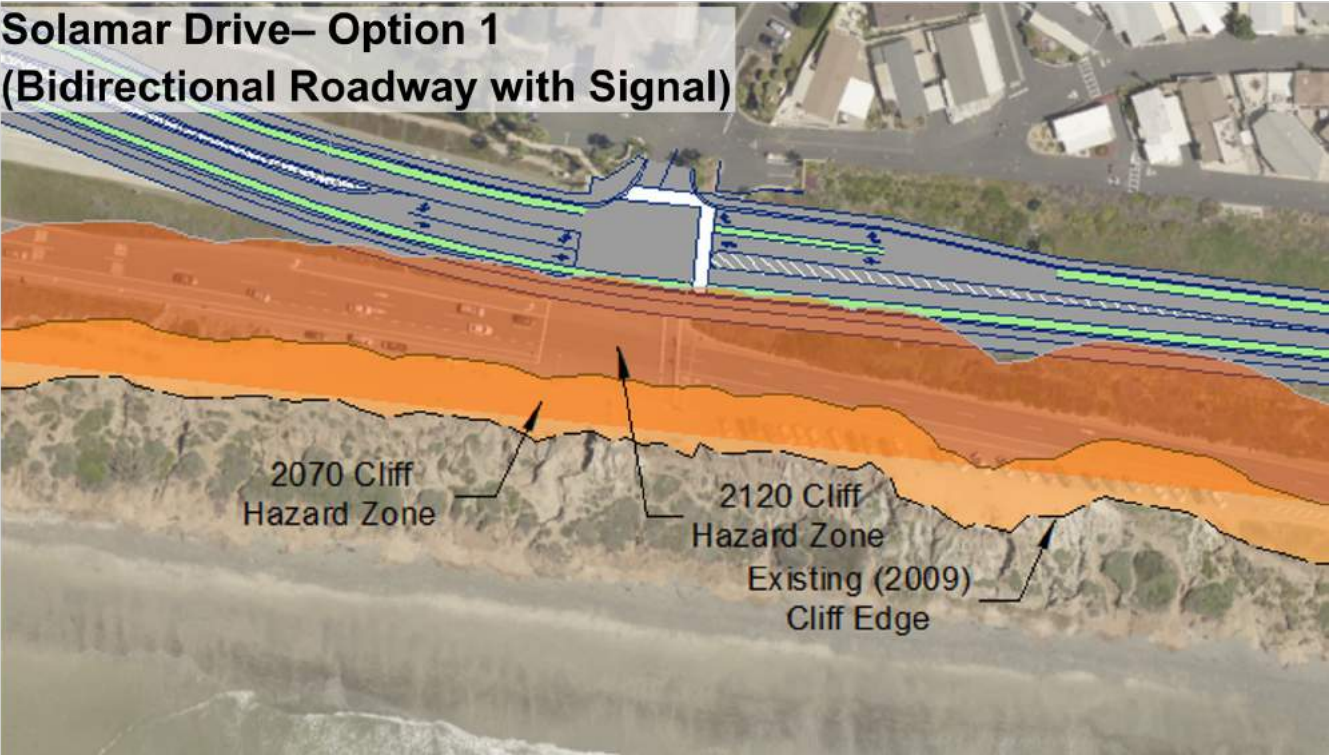


Figure 18. Solamar Drive Segment – Option 1



Figure 19. Current Intersection at Solamar Drive and Informal Beach Accessways (left) Compared with a Nearby Example of a Formalized Staircase at South Carlsbad State Beach (right) as an example to inform Option 2.
 Source: Copyright © 2002-2019 Kenneth & Gabrielle Adelman, California Coastal Records Project, www.californiacoastline.org

4.3.3 Las Encinas Creek Segment

The vulnerabilities in the Las Encinas Creek segment are cliff erosion and coastal flooding, with coastal flooding within the “dip in the road” along southbound Carlsbad Blvd at the mouth of Las Encinas Creek being the primary concern (Figure 20). Both of these vulnerabilities can be seen in present day as the cliffs have been protected by a rock revetment and the road periodically floods when waves overtop this structure.

Two different project options have been identified in this segment for how and when infrastructure is adapted each with different levels of hazard exposure. These options, called 1) Phased Adaptation and 2) Retreat Now, result in differing adaptation pathways. The Retreat Now option builds the project segment to the ultimate 2120 condition immediately, while the Phased Adaptation option repurposes the coastal infrastructure by creating a mobility corridor upon it in the as-built or Phase 0 of the project, to be used for as long as it is safe for the public. These options present key project decisions to be made by the City Council with input from the community and other affected stakeholders, and, ultimately, come down to how they would like to use these spaces now and in the future and what funding sources could be identified for improvements.

The Encina Wastewater Authority (EWA) provides wastewater treatment services to more than 379,000 residents in northwestern San Diego County with a facility located inland of the project area. The EWA has an existing ocean outfall that extends roughly 1.5 miles offshore to a water depth of 150ft. The outfall pipeline intersects southbound South Carlsbad Blvd approximately 200ft south from the centerline of the Las Encina Creek bridge (see callout for existing 48” EWA outfall in Figures 21 and 22). As-builts indicate that the pipeline is approximately 5ft below the current grade of the roadway. All adaptation options for the roadway will need to account for the protection of the existing EWA outfall pipeline. Further coordination with EWA will be needed during the next phase of this project (i.e., final engineering) to refine protection or accommodation options. as this infrastructure is outside of the City’s sole jurisdictional authority.

The two adaptation options being considered for the Las Encinas Creek Segment are further described below:

- **Phased Adaptation:** This would either leave in place or partially remove the southbound Carlsbad Blvd infrastructure for interim passive or active recreational uses until coastal hazards overwhelm the repurposed space. Once one of the identified triggers is met, the southbound roadway would be demolished, and recreational uses would shift to either the new complete street corridor or a new Class 1 boardwalk, depending on the identified trigger. Major infrastructure elements (e.g., the complete street roadway) would be constructed at its ultimate location while other temporary/movable, low-cost project features would provide amenities in the interim in spaces currently identified as being vulnerable to projected coastal hazards. The existing rock revetment will persist to support the use of the newly created space on the southbound roadway. Phased Adaptation is shown graphically in Figure 21.
- **Retreat Now:** This option refers to the naturalization of the southbound roadway area by removing infrastructure within the 2100 projected Coastal Hazard Zone and restoring the La Encinas Creek estuary system. More specifically, this alternative seeks to establish a more natural cross-shore gradient promoting morphological processes that support the formation and resilience of a coastal pocket beach, dune, and dune-slack wetlands. The Las Encinas Creek estuary and beach would be allowed to evolve naturally and without major maintenance after the project is constructed. The infrastructure to be removed includes the existing southbound Carlsbad Boulevard bridge structure, 1,300 LF of rock revetment, and the existing roadway surface (i.e., asphalt) and fill prism (i.e., compacted dirt used to form the roadbed). The goal would be to reuse rock from the deconstructed revetment in other areas of the larger project that may require stabilization material (e.g. bridge abutments or EWA outfall protection). The Retreat Now option is shown graphically in Figure 22.

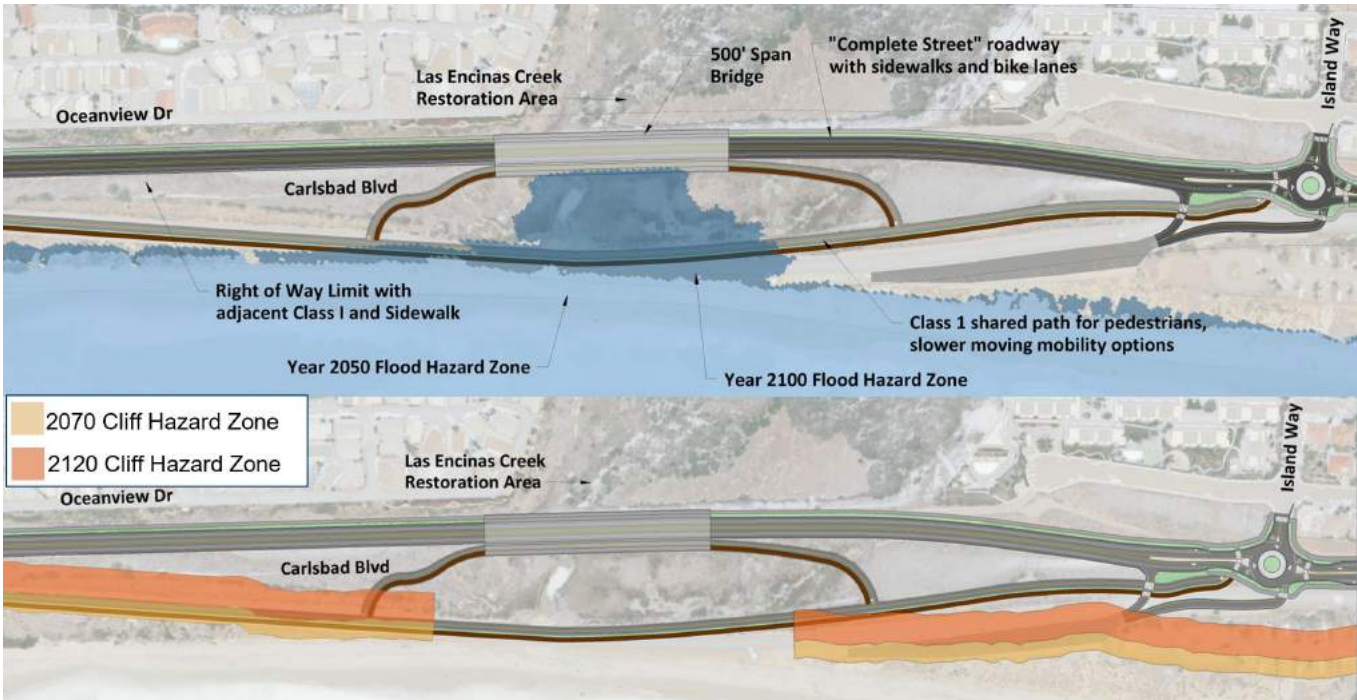


Figure 20. Phase 0 in the Las Encinas Segment overlaid with flood (top) and cliff erosion (bottom) hazards.

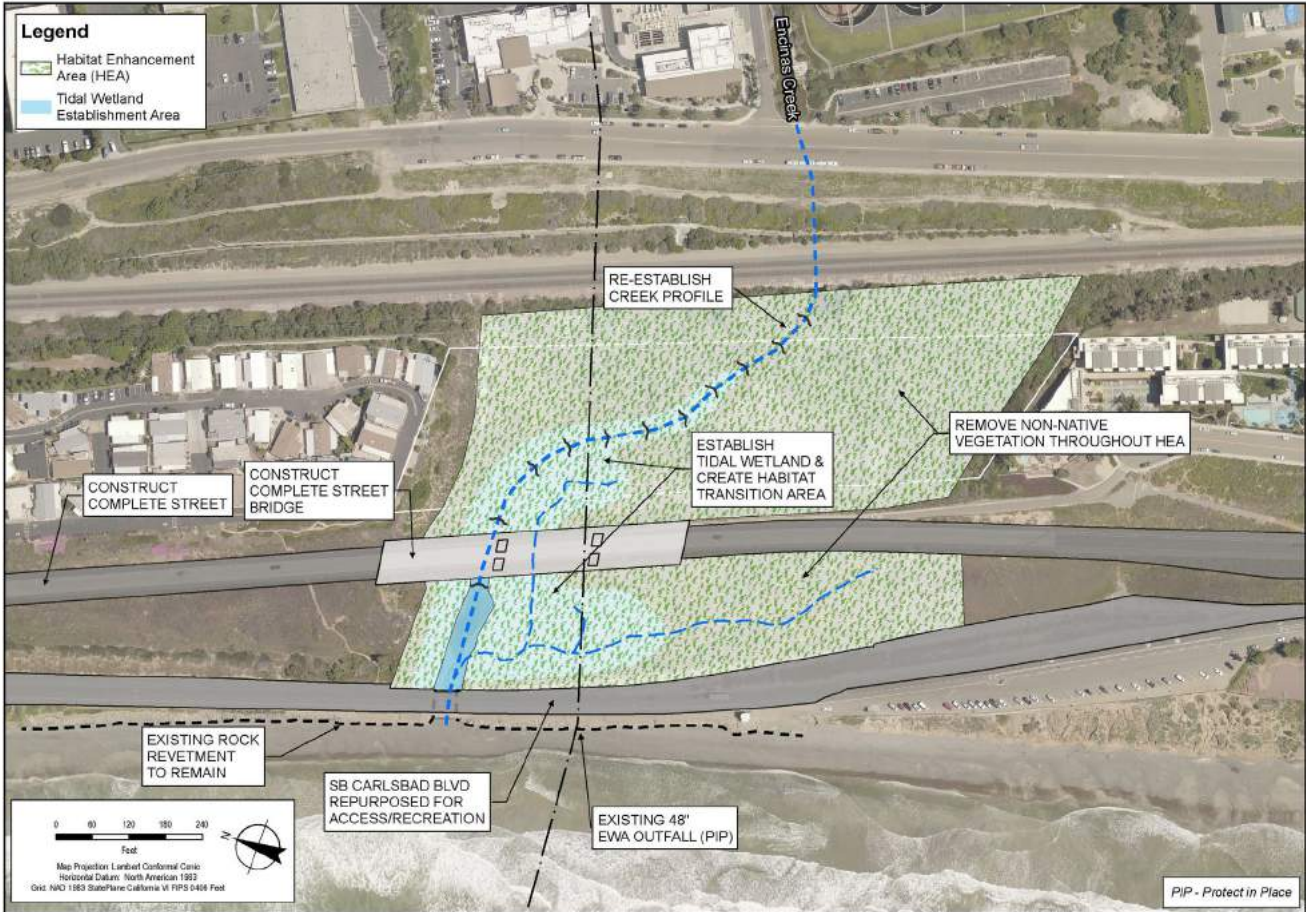


Figure 21. Phase 0 (as-built conditions) for the Phased Retreat Alternative

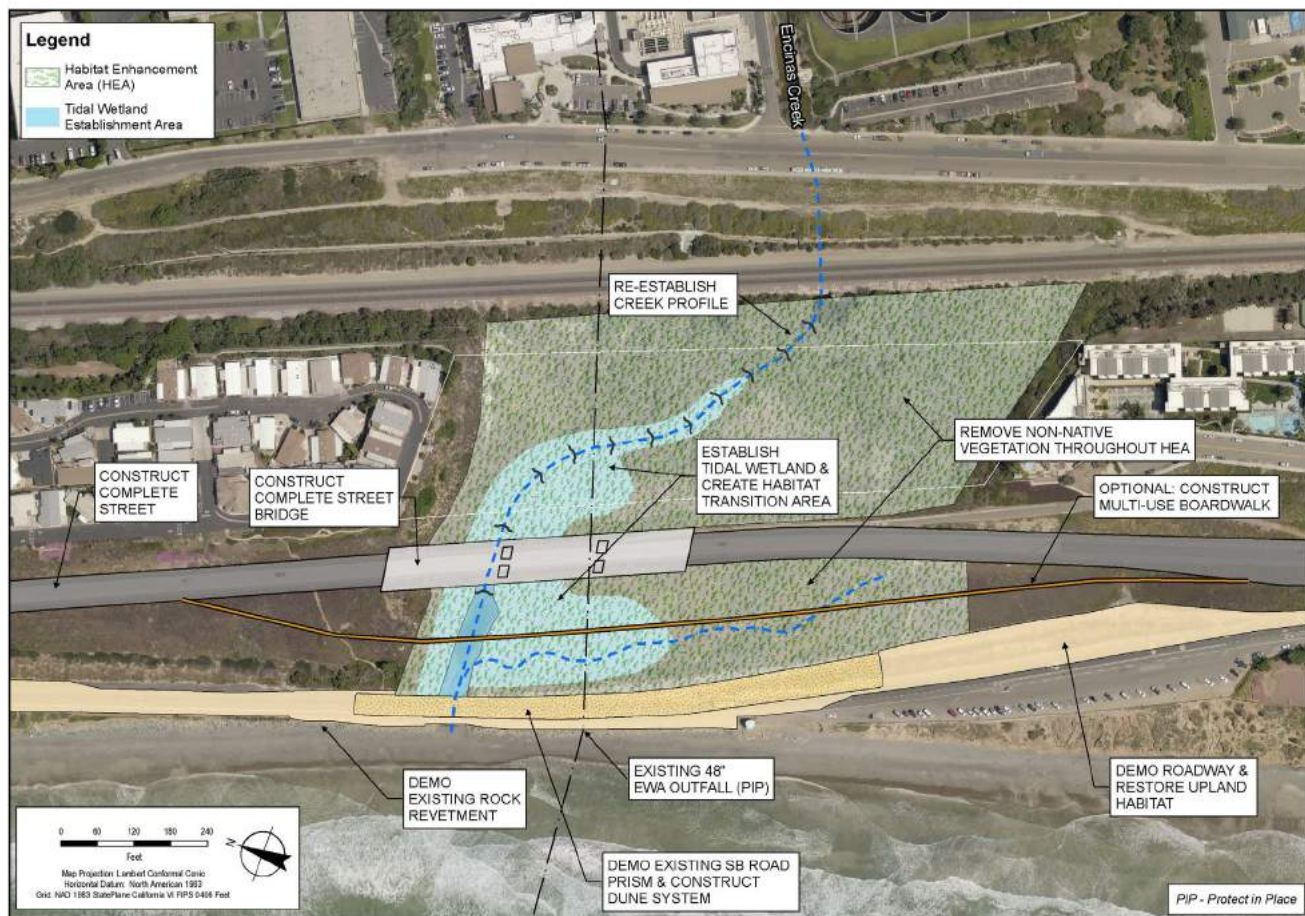
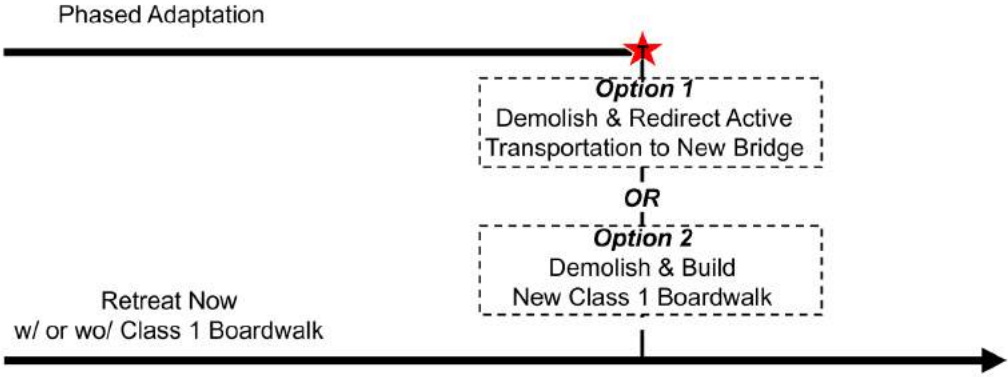


Figure 22. Phase 0 (as-built conditions) for the Retreat Now Alternative

4.3.3.1 Adaptive Pathways

Key themes around adaptive pathways for this segment hinge on which option is pursued in this segment (Phased Adaptation or Retreat Now). Since the Retreat Now option is built to a year 2120 resilient location, an adaptive pathway was not developed for that option. The proposed adaptive pathway for the Phased Adaptation option is shown in Figure 23. As shown, two triggers were identified that would signal the need to begin planning and implementation of the removal of the southbound roadway and shifting active transportation users to a new boardwalk or the complete street roadway and bridge. Triggers identified include rock revetment armoring integrity, and flood frequency. A lead time of five to 10 years was identified as sufficient time to plan and implement this management action, assuming the action is included in a programmatic environmental document (assumed PEIR) and funding exists.



Triggers

- ★ Armoring Integrity: Rock revetment repair & maintenance – need to extend or repair a significant segment of rock revetment (500 LF). Repair or damage exceeds \$5M (2023 dollars).
- ★ Flood Frequency: Significant overtopping of rock revetment and flooding of Mobility Corridor 10 times in one year (i.e., 12 month period).

Action

Begin planning & implementation of Option 1 or 2 (lead time assumption 5-10 yrs*)

**Assumes PEIR and available funding*

Figure 23. Adaptive Pathways for Las Encinas Creek Segment

4.3.3.2 Trade-offs between Phased Adaptation and Retreat Now Options

The options of Phased Adaptation and Retreat Now each have unique advantages, disadvantages, and trade-offs that warrant evaluation. Table 1 summarizes these to aide in the decision-making process.

Table 1. Summary of Key Advantages, Disadvantages and Trade-offs between the Phased Adaptation and Retreat Now Options

Category	Phased Adaptation	Retreat Now
Permitting and Construction: <i>Can all elements of the design be implemented at once?</i>	No. This option would occur in phases. Construction, disruption to traffic flows, and permitting would need to occur one or more times once a trigger is met.	Yes. This option would perform all actions at one time, not requiring any additional permitting or construction.
Financial: <i>What are the differences in costs between the two options (qualitatively)?</i>	This option may be less expensive in the short-term because it would repurpose the existing southbound roadbed into a mobility corridor. Thus, the project would not require the demolition of the bridge, rock revetment or roadway. This option may have more expensive construction costs over a 20-50 year period because it results in more planning and construction activities spread out over time. Factors to consider include mobilization/demobilization, pulling construction permits (e.g., traffic control, etc.), escalation of material and labor costs, increase in construction costs, and scarcity of future funding. By waiting until impacts are realized, addressing all future adaptation needs and costs could vary greatly, likely being much higher than addressing components all at once. Additionally, this option does not take full advantage of the current availability of state and federal grants to support projects of this type. The availability of these funding sources for future phases of the project is unknown.	Higher costs to construct because it includes the demolition costs of the bridge, rock revetment and roadway. This option would need to protect the existing EWA outfall, likely with rock reused from onsite materials (deconstructed revetment), which adds additional cost in the short-term. This option may be less expensive over a 20-50 year period because it would construct everything at once in today's dollars (i.e., reduced escalation). Additionally, this option could take advantage of ample state and federal funding that exists for coastal resilience projects today. This funding is forecasted to be available at least over the next 5 years, which could support implementation costs.
Coastal Hazards & Public Safety: <i>Would the option provide public protection from existing and projected future coastal hazards?</i>	Yes. This option would repurpose the roadway for recreational uses until it becomes unsafe to use for this purpose. The existing rock revetment would remain in place to protect the roadway from erosion. Triggers described within this plan identify when the space needs to be abandoned.	Yes. This option would relocate public infrastructure out of the Coastal Hazard Zone for the next 100 years. Recreational uses of the abandoned space would be protected through nature-based design techniques (e.g., cobble-sand dune system).
Sandy Beach: <i>Will the alternative sustain a dry, sandy beach in the study area?</i>	No. The existing beach is narrow. It is anticipated that with 1.7' of SLR, the existing narrow beach within the Las Encinas Creek study area will be completely eroded/inundated, assuming no other management actions occur.	Yes. This option is anticipated to result in a localized increase in beach area immediately through removal of the roadway. Preliminary modeling suggests this pocket beach may sustain through 6.6' of SLR as the beach and created dune are allowed to transgress landward.
Access: <i>What are the differences in public access and use between the two options?</i>	This option provides active transportation along the southbound roadway, closer to the coast and similar to current conditions. Until triggers are met and the space needs to be abandoned, access would feel safer and likely more welcoming given the elimination of vehicular traffic. Recreational opportunities along the beach would remain constrained due to increasingly narrow beach widths as sea levels rise.	Active transportation uses would be focused along the enhanced roadway, which would be located further from the coast and elevated, a changed user experience from present day. The removal of the southbound roadway would enhance existing, and create new, recreational opportunities from the additional beach space.
Habitat Restoration: <i>How would these options benefit the restoration of Las Encinas Creek?</i>	The southbound roadway area will be restored to coastal strand once the trigger is met. The area to be restored and viability of the habitat may be lower than if the habitat was built initially due to elevated water levels and more frequent wave attack.	This option restores the southbound roadway to coastal strand habitat immediately. The coastal strand habitat has more space and time to establish prior to increased water levels and wave attack, making it a more resilient system.

4.3.4 Island Way Segment

The main vulnerability of concern in the Island Way Segment is cliff erosion. The first line of infrastructure to be impacted by cliff erosion in the future would be the South Carlsbad State Parks Campground day use lot and overnight areas (Figure 24). Given that the proposed roadway is inland of these campground facilities and significantly inland from the cliff edge, an adaptive pathway was not developed for this segment. Instead, it is recommended that the city continues to coordinate with State Parks regarding their plans to adapt these facilities.

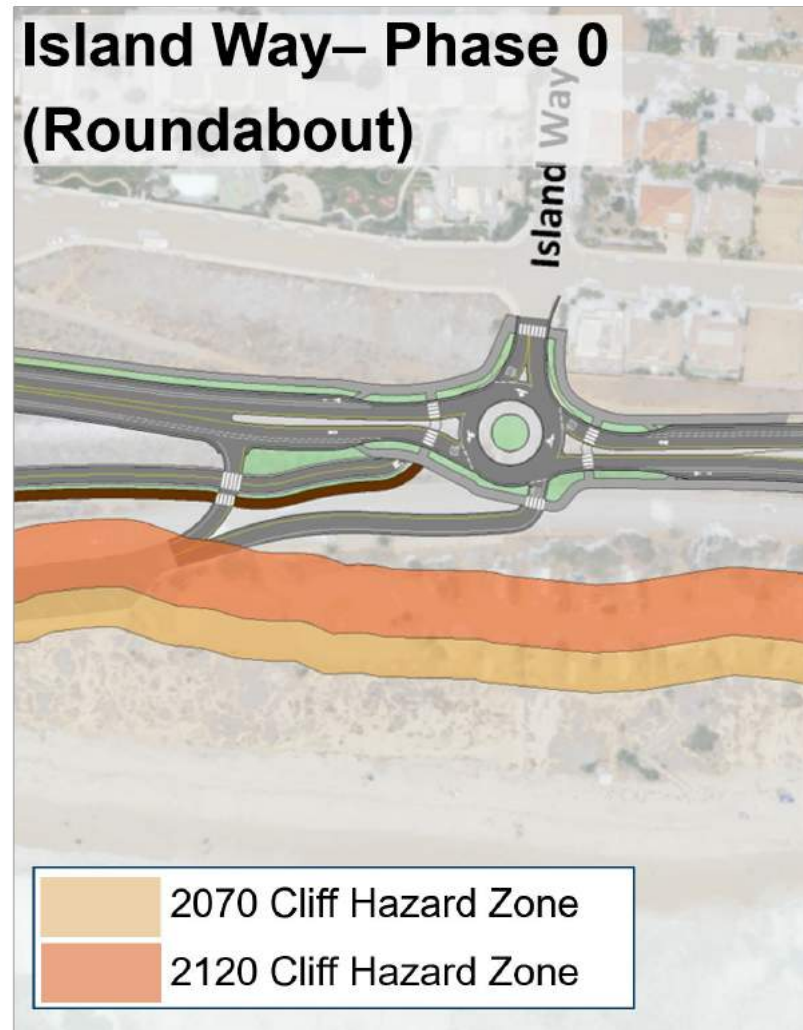


Figure 24. Phase 0 (as-built condition) of the Island Way Segment

5. Monitoring Framework

Based upon the thresholds identified within the adaptive pathways for each project segment, monitoring will be required to help understand when a threshold has been met. A monitoring framework was developed with potential methods and data collection frequencies shown in Table 2 below.

Table 2. Proposed Monitoring Activities to Inform Proposed Adaptive Pathways

Metric	Monitoring Method		Frequency
Cliff Erosion	High-tech / Data driven	Topographic surveys (traditional survey profiles, orthophotogrammetry, LiDAR)	Semi-annual Surveys Extreme Events
	Low-tech/ Interpretive	Site amenities (e.g., colored pavers, benchmarks, signs) indicating bluff top edge erosion and encroachment into established thresholds	Continuous
Beach Erosion	Beach profile surveys (back beach to depth of closure) Subaerial beach surveys via orthophotogrammetry or LiDAR		Semi-annual Surveys Extreme Events
Rock revetment / Armoring Integrity	Topographic Survey (traditional survey profiles, orthophotogrammetry, LiDAR) Structural condition inspection		Annual Post Extreme Events
Roadway Maintenance Costs	Financial tracking of cleanup and repair activities		Annual
Flood Frequency	Flood elevation thresholds (e.g., minor, moderate, significant) are determined and tracked by combined tide and wave observations outputs in coordination with SIO; Supplemented by site observations and closure tracking.		Continuous Extreme Events Annual
Public Access / Usability	Site Observations Closure Tracking Aggregated Big Data Sources		As Needed Extreme Events

Further description of the monitoring approach for each of the metrics is provided below:

- **Cliff Erosion:** Since the setback (i.e., distance from the cliff edge to the buffer) is a key threshold in the adaptive management pathways for the segments, cliff monitoring will be important to inform this plan. Two options exist to track cliff erosion in the project area – dubbed low-tech and high-tech options. The high-tech option leverages cliff monitoring currently performed by SIO periodically; however, monitoring at an increased frequency, such as semi-annual, may be necessary to detect and track changes. Monitoring can be performed via traditional survey methods or via drone or plane overflight using orthophotogrammetry or LiDAR methods. If the city notices significant erosion it may elect to complete an additional survey(s) accordingly. The low-tech option utilizes low-cost methods that may be adequate for certain areas along the project site given the nature of bluff erosion. Benchmarks integrated within the infrastructure amenities could serve as a passive method for tracking cliff erosion. For example, markers or pavers between the setback and buffer could have a progressive color scheme that would identify the setback encroaching on the buffer. Added benefits of this low-tech monitoring technique would be the easy ability of maintenance staff to track changes in the bluff visually, as well as serving as an educational opportunity for the public.
- **Beach Erosion:** Though not explicitly called out as a threshold in the adaptive management pathways, beach conditions have a significant effect on other metrics within this plan – specifically cliff erosion, armoring integrity and flood frequency. Thus, monitoring beach changes quarterly is recommended within the project area. Monitoring should consist of traditional beach profile surveys (back beach to depth of closure) or capturing the subaerial beach with orthophotogrammetric or LiDAR methods. SIO already performs quarterly beach monitoring at South Carlsbad State Beach that can be leveraged to track changes in beach conditions over time.

- Rock Revetment / Armoring Integrity: The rock revetment could shift and become increasingly destabilized as waves of greater magnitude more frequently impact the structure with SLR. The rock revetment is currently monitored annually as part of the city's CDP with the Coastal Commission. It is recommended that this program continue and potentially be increased in frequency as the structure becomes increasingly impacted (e.g., post-extreme event condition surveys). It is also recommended that a coastal engineer or a civil/structural engineer with experience with coastal structures inspect the structure annually to assess its condition.
- Roadway Maintenance Costs: Keeping a ledger on annual expenditures for roadway cleanup and repair is important to understand escalating costs of maintaining public use along the repurposed southbound roadway. This monitoring metric requires a city staff person to organize cost data from various departments into a ledger.
- Flood Frequency: This metric consists of partnering with SIO to use combined tidal conditions (predictions and observations) and wave modeling outputs to determine and validate flood elevation thresholds (e.g., minor, moderate, significant and track flooding over time. The exact elevation and oceanographic conditions to define significant flooding will be determined and validated at a later date. Once validated, this tool could be used to identify and track flood events to discern if the threshold of 10 flood events in 12 months is triggered. This information could be added to the existing SIO website and linked through a city webpage. Automated emails to city staff could be generated in anticipation of forecasted flood events. This could be supplemented with site observations captured during extreme events with a field sheet and/or photos.
- Public Access / Usability: Though not explicitly called out as a threshold in the adaptive management pathways, site usability is anticipated to change over time as assets experience impacts. These changes can be documented to supplement the objective thresholds selected (e.g., erosion, flooding, and armoring integrity). Methods for tracking this could include site observations, closure tracking of key pieces of infrastructure (e.g., bikeway, roadway, etc.) or through aggregated big data sources which can show usage patterns derived from cell phone data.

6. Conclusions

This Adaptive Management Plan presents adaptive pathways for the project, divided into four discrete segments. These pathways identify future management actions that will be taken once coastal hazards meet certain thresholds or triggers. These thresholds vary from proximity to the proposed infrastructure elements, flood frequency, and armoring integrity and maintenance costs. A monitoring framework was developed to help the city identify and track metrics over time to determine when thresholds are met.

The adaptive pathways for each of the four project segments are summarized below:

- Palomar Airport Road: Four potential adaptive phases were identified in the plan for this segment. The overall themes of these phases are to narrow and eventually relocate the proposed bikeway corridor over time with the goal of keeping this mobility corridor in close, but safe, distance from the ocean to maximize coastal views from the trails.
- Solamar Drive: One potential adaptive phase was identified in the plan for this segment with multiple options. The overall themes are to maximize the use and function of the roundabout and explore multi-benefit opportunities for enhanced access. One option is to evaluate erosion control and cliff stabilization methods which could be pursued in conjunction with a beach access stairway at this location. Another option would be to change the proposed roundabout to a signal to regain some space and distance from the cliff erosion hazard.
- Las Encinas Creek: Adaptive pathways for this segment hinge on which project option is pursued (i.e., Phased Adaptation or Retreat Now). Since the Retreat Now option is built to a year 2120 resilient location, an adaptive pathway was not developed for that option. The proposed adaptive pathway for the Phased Adaptation option includes two triggers that would signal the need to begin the planning and implementation of the removal of the southbound roadway and shifting active transportation users to a new boardwalk or the complete street roadway and bridge. Triggers identified include rock revetment armoring integrity and flood frequency.
- Island Way: Given that the proposed roadway is inland of State Parks campground facilities and significantly inland from the cliff edge, an adaptive pathway framework was not developed for this segment. Instead, it is recommended that the city continues to coordinate with State Parks regarding their plans to adapt these facilities.

It is important to note that the project is still in the preliminary engineering phase. Thus, this plan is based upon a conceptual understanding of how particular assets and features throughout the project are situated. This plan may require revision as additional engineering details are refined.



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BEACH PRESERVATION COMMISSION

Staff Report

Meeting Date: April 2, 2024

To: Beach Preservation Commission

From: Kyle Lancaster, Parks & Recreation Director

Staff Contact: Nick Stupin, Parks Planning Manager
nick.stupin@carlsbad.gov, 442-339-2527

Subject: Tri-Annual Report Out on Work Plan for 2024

Recommended Action

Review the Beach Preservation Commission's Work Plan for 2024 and report out on progress made towards completing the goals and tasks.

Discussion

At the regular scheduled meeting held on Dec. 5, 2023, the Beach Preservation Commission approved its 2024 work plan. The Goals & Tasks section of the approved work plan states:

4. *Tri-annually report out the progress on completing the Goals & Tasks of the Beach Preservation Commission's Work Plan.*
 - a. *Participate in the review of these goals and tasks during an agenda item scheduled every other meeting of the Beach Preservation Commission.*

This agenda item is the first of three report outs on the progress of completing the goals and tasks of the Beach Preservation Commission's Work Plan for 2024.

Next Steps

The Beach Preservation Commission will continue to report out on the progress completing the goals and tasks set forth in its approved work plan.

Exhibits

1. Beach Preservation Commission's Work Plan for 2024

City of Carlsbad

Beach Preservation Commission Work Plan

2024

I. Mission Statement

The Mission of the City of Carlsbad Beach Preservation Commission is to advise the City Council and the City Manager on matters related to erosion prevention and protection/enhancement of the Carlsbad shoreline (e.g., littoral cells, sea level rise et.al.), and to study the best means to maintain beaches for the safety and optimum enjoyment of the public.

II. Composition

Consistent with Chapter 2.34 of the Carlsbad Municipal Code, the Beach Preservation Commission shall consist of seven members appointed by the mayor with the approval of the city council. Members shall serve four-year terms. The Commission shall investigate, research, and make recommendations to the city council and the city manager on general coastal topics, studies, and programs, including, but not limited to, the following: Protecting and enhancing the shoreline (e.g. littoral cells, and sea level rise); preventing beach erosion; and preserving and maintaining beaches for the safety and optimum enjoyment of the public. (Ord. CS-452 § 2, 2023) Commission Members shall serve on a volunteer basis, on staggered terms. Commission Members are expected to attend all meetings, held at dates/times set by the Commission or requested by the City Council or City Manager. The Commission shall be standing, but subject to termination by the City Council if it deems the existence of the Commission is no longer necessary to the City.

III. 2024 Goals & Tasks

The Beach Preservation Commission will focus on the following 2024 Goals & Tasks: (Goals identified in numerals; Tasks to accomplish those Goals identified in alphas)

1. Gain a better understanding of local shoreline preservation and beach nourishment projects.
 - a. Study and investigate coastal erosion impacts to Carlsbad beaches, with an understanding of coastal processes and terminology, including:
 - Disruption of natural sediment flow and sand supply
 - High intensity storms and potential flooding
 - Hard stabilization structures or “coastal armoring”
 - Sand replenishment/beach nourishment
 - Living shorelines and shoreline buffers
 - Sea Level Rise impacts
 - Littoral cell/Oceanside cell
 - b. Review informational documents for current and future Commission Members, with items to include:

- Minutes and information from regional planning partners such as SANDAG's Shoreline Preservation Working Group.
 - c. Invite an oceanography professional (e.g., Scripps Institution of Oceanography) to provide an advertised presentation at a Beach Preservation Commission Meeting, with a focus on educating citizens on the means and ways sandy beaches are and could be preserved in Carlsbad.
2. Encourage private and public representatives to be engaged and work together on protection and enhancement of local beaches.
 - a. Schedule and carry-out plans for two beach clean-up events (i.e., one in July and one in October or November) in the northern beaches of Carlsbad.
 - b. Receive updates from representatives from the three lagoon foundations in Carlsbad (Agua Hedionda, Batiquitos, and Buena Vista Lagoons).
 - c. Receive updates from the California State Parks and Recreation Department on local erosion issues, prevention efforts, and any beach access improvements to our local beaches.
 - d. Upon receipt of updates from local jurisdictions (i.e. lagoon foundation, SANDAG, State Parks, California Fish and Wildlife, etc.), prepare comments as a Commission to submit to the City Council regarding any comments or concerns determined to be of interest to the Council.
 - e. Observe and report on Jan. 11, Jan. 12 and Feb. 9 king tides and extreme low tides during the winter months (i.e., December – January) onsite at the Encinas Creek dip and the South Tamarack State Beach.
 3. Participate in outreach opportunities related to protection and enhancement of local beaches.
 - a. Look for opportunities to engage the citizens and school children of the City of Carlsbad (e.g., high school environmental/marine science clubs, et. al.) in stewardship of our coastline through events such as annual beach cleanups to encourage efforts to keep our beaches clean throughout the year.
 - b. Work with other city departments to encourage outreach for the citizens of Carlsbad to educate them on potential erosion impacts and sea level rise as shown in the City of Carlsbad Local Coastal Plan. Invite a city planner to provide an advertised presentation at a Beach Preservation Commission Meeting, after the California Coastal Commission's review and comment on the Local Coastal Plan.
 - c. Observe and monitor local beaches and tidepools for issues contributing to degradation of beaches including feeding squirrels and other wildlife, pet waste issues, and trash.
 - Resulting issues requiring action shall be reported to city staff.
 - d. Make periodic tours of all Carlsbad beaches to assess physical conditions, usage factors and safety considerations for the beaches and potentially impacted surrounding areas.
 - Resulting issues requiring action shall be reported to city staff.

4. Tri-annually report out the progress on completing the Goals & Tasks of the Beach Preservation Commission's Work Plan.
 - a. Participate in the review of these goals and tasks during an agenda item scheduled every other meeting of the Beach Preservation Commission.