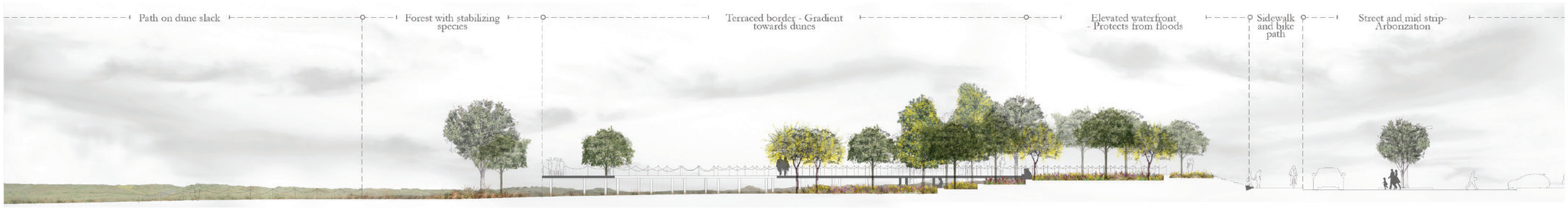

Country / City	Santiago, Chile
University / School	Pontificia Universidad Católica de Chile
Academic year	2018
Title of the project	*Boca Sur* Coastal Dune Park: Landscape Design for Tsunami Resilience
Authors	María Ignacia Weihrauch Varela

TECHNICAL DOSSIER

Title of the project	*Boca Sur* Coastal Dune Park: Landscape Design for Tsunami Resilience
Authors	María Ignacia Weihrauch Varela
Title of the course	Landscape as Infrastructure for Risk Reduction and Urban Resilience to Natural Disasters
Academic year	2018
Teaching Staff	Arturo Lyon and Osvaldo Moreno
Department/Section/Program of belonging	MAPA · Magister en Arquitectura del Paisaje
University/School	Pontificia Universidad Católica de Chile

Chile is continuously affected by natural disasters. Due to Climate Change, these events are increasing its frequency and intensity. Cities, on the other hand, are expanding its limits and being built, most of the times and without any planning or design, in risk areas making them more vulnerable to these catastrophes. Earthquakes, fires, tsunamis and volcanic eruptions are creating a hard tension between the natural and the built environment.

This project, located in the coastal area of Boca Sur, in San Pedro de la Paz (Concepción), is a high risk scenario for urban development due to its location in front of the sea, the risk of tsunamis, its deteriorated ecosystem and lack of relationship between the city and the coastline. Through an understanding of tsunamis and the case of study, this project purpose is to recognize the problems and critical layers of the site, in order to design strategies to re-configure the current city limits as a resilient and dynamic border landscape that helps mitigate the effects of an extreme event. This proposal restores the dune cord, facilitating the use of its natural contain capacity in order to dissipate the force of the waves. The design establishes also a new relationship between the city and its socio-ecosystem through biological buffers, control volumes, circulations and materials.

For further information
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CLIMATE CHANGE AGAIN

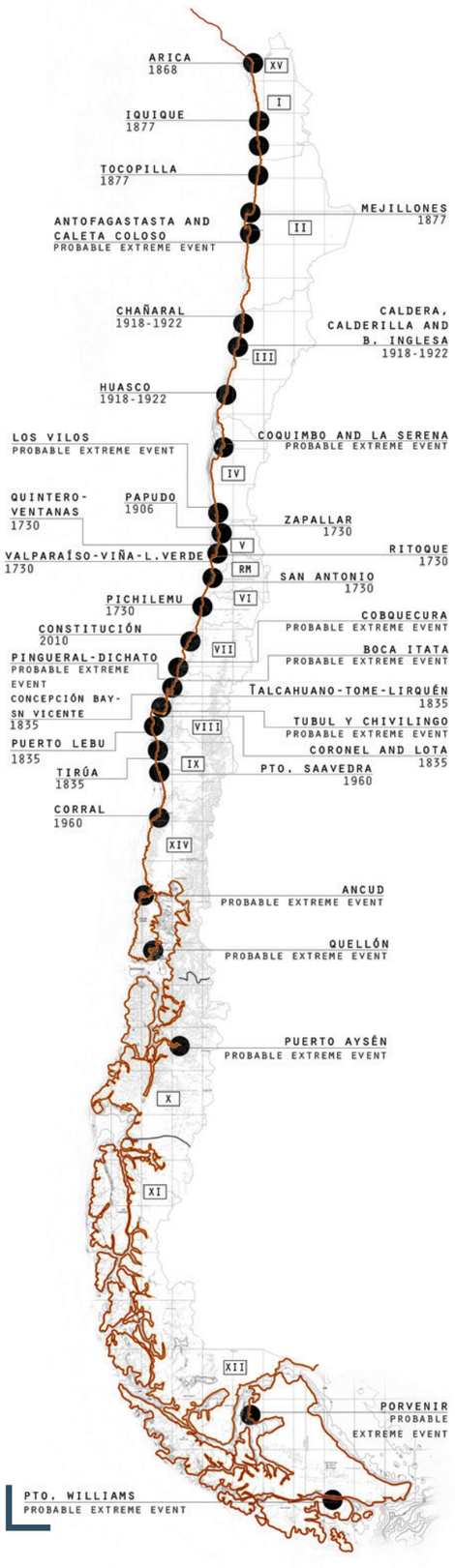
11th International Biennial Landscape Barcelona

Barcelona September 2020

SCHOOL PRIZE

NATURAL DISASTERS AS A PROBLEM FOR LANDSCAPE ARCHITECTURE

TSUNAMI REGISTER IN CHILE



Wave run-up

Ship damage

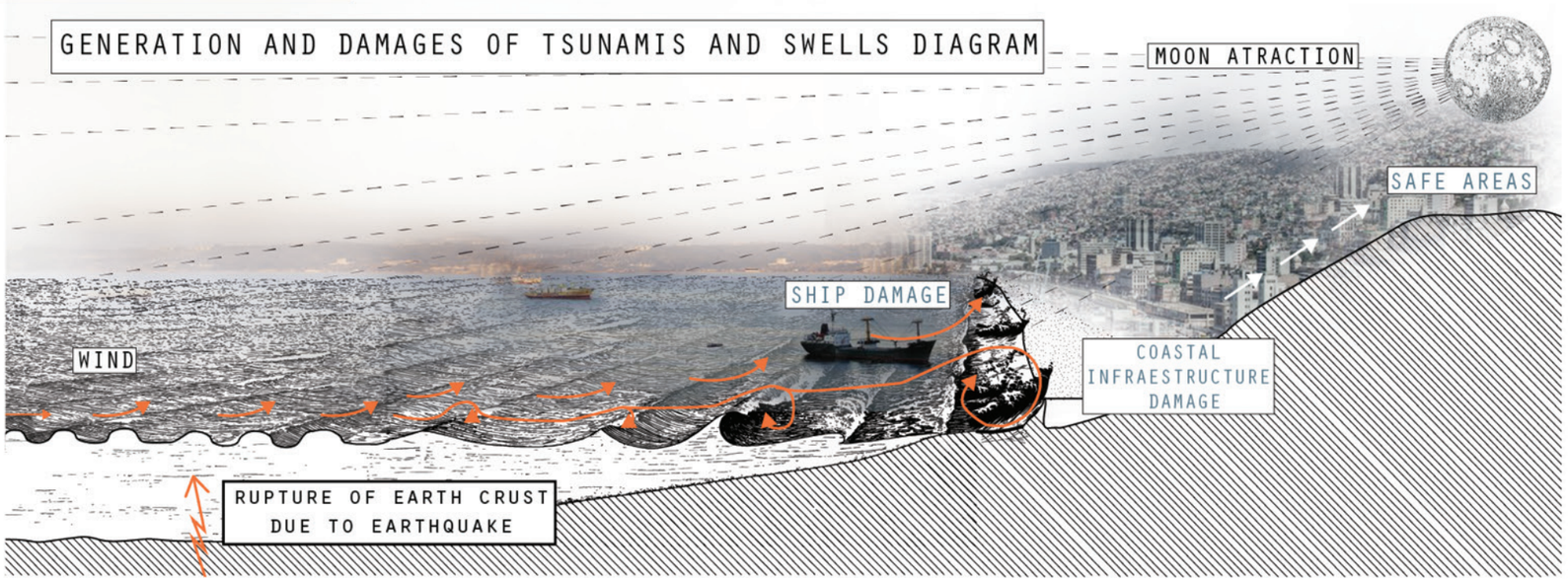
Damage to human integrity

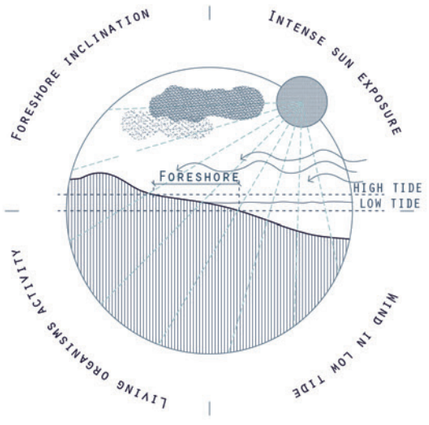
Coastal infraestructure damage

Housing damage

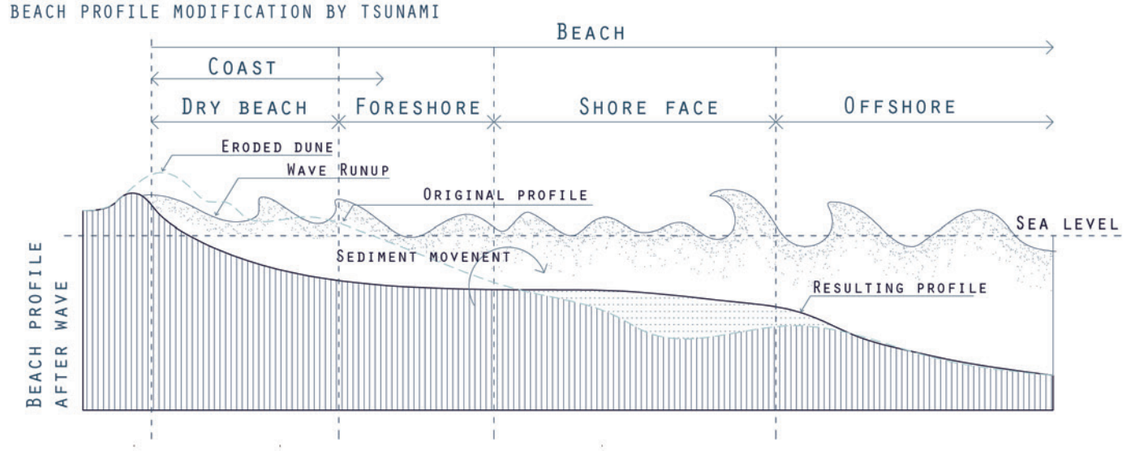
Vulnerable ecosystems

GENERATION AND DAMAGES OF TSUNAMIS AND SWELLS DIAGRAM

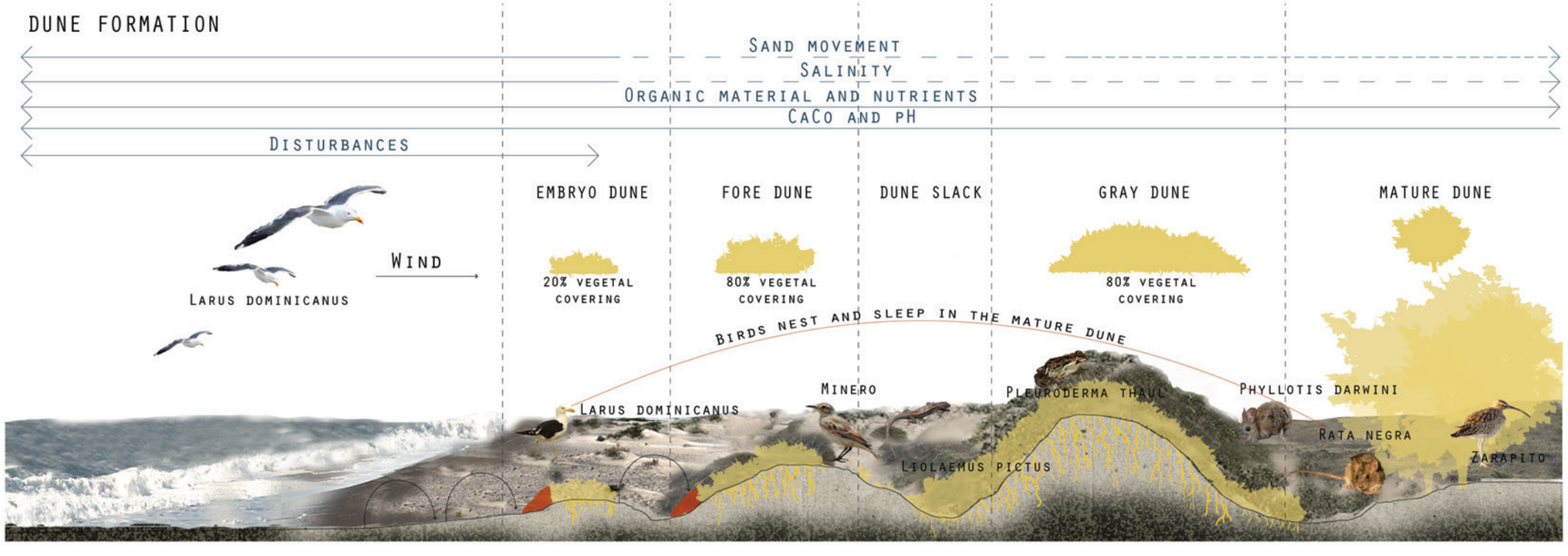


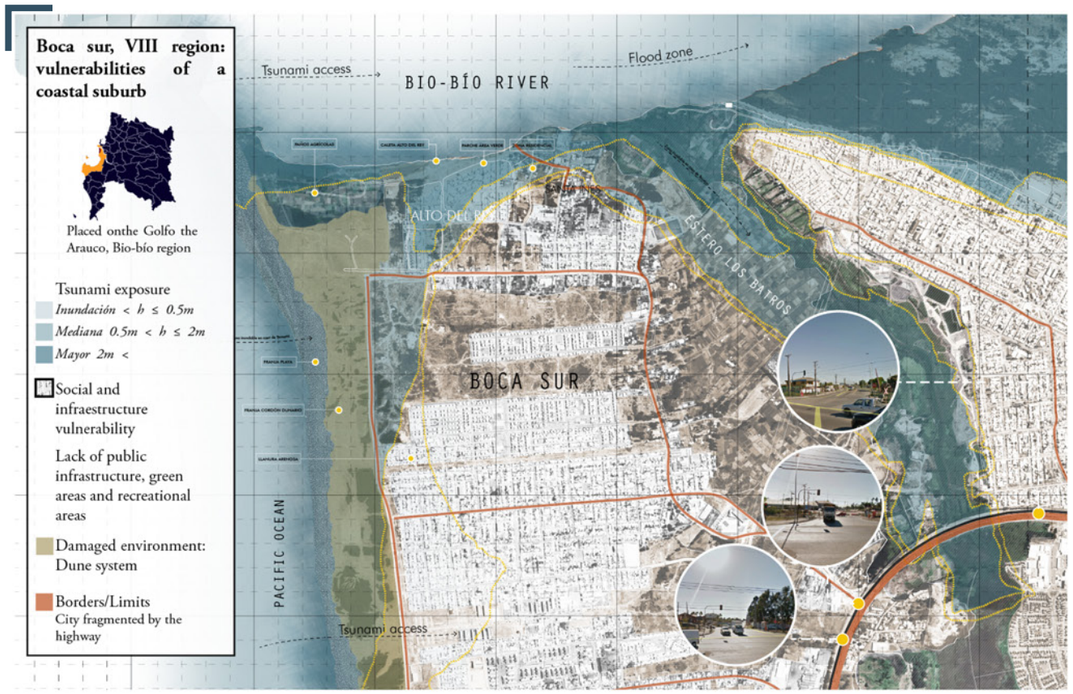


BEACH PROFILE MODIFICATION BY TSUNAMI

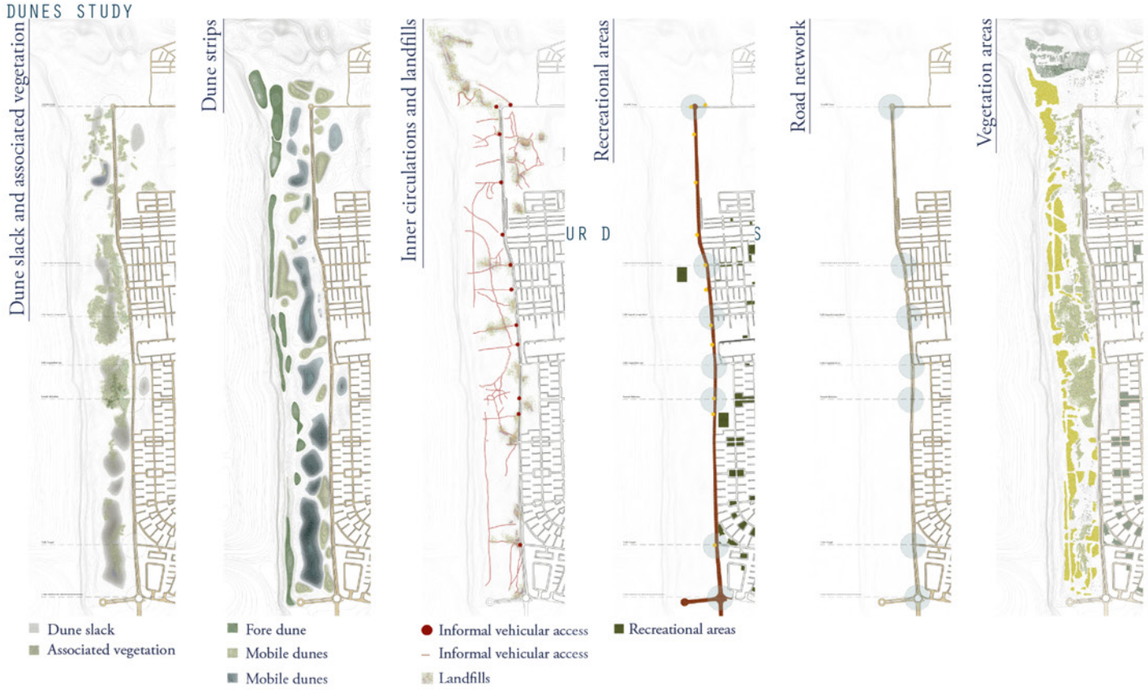


DUNE FORMATION

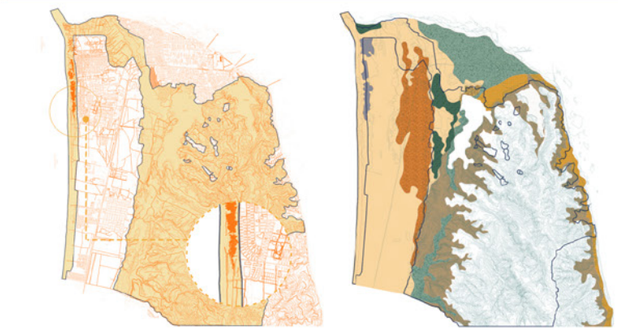




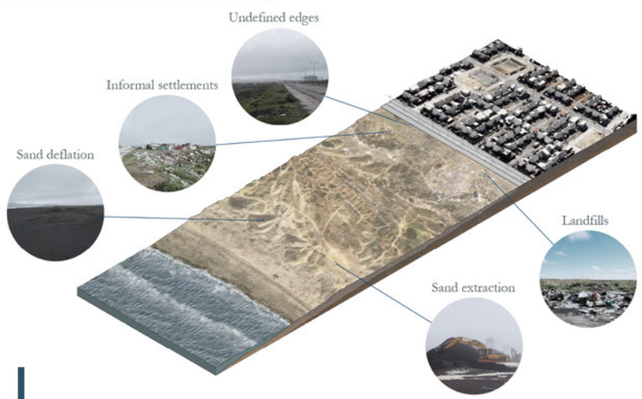
DUNES STUDY



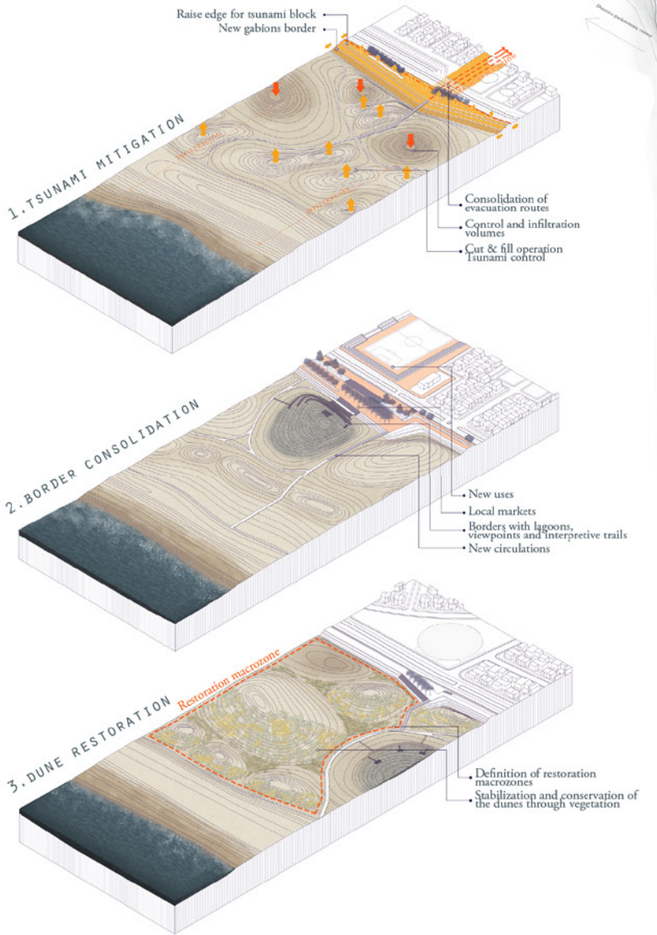
BOCA´S SUR DISCORDANCE BETWEEN PLANNING AND RISK AREAS



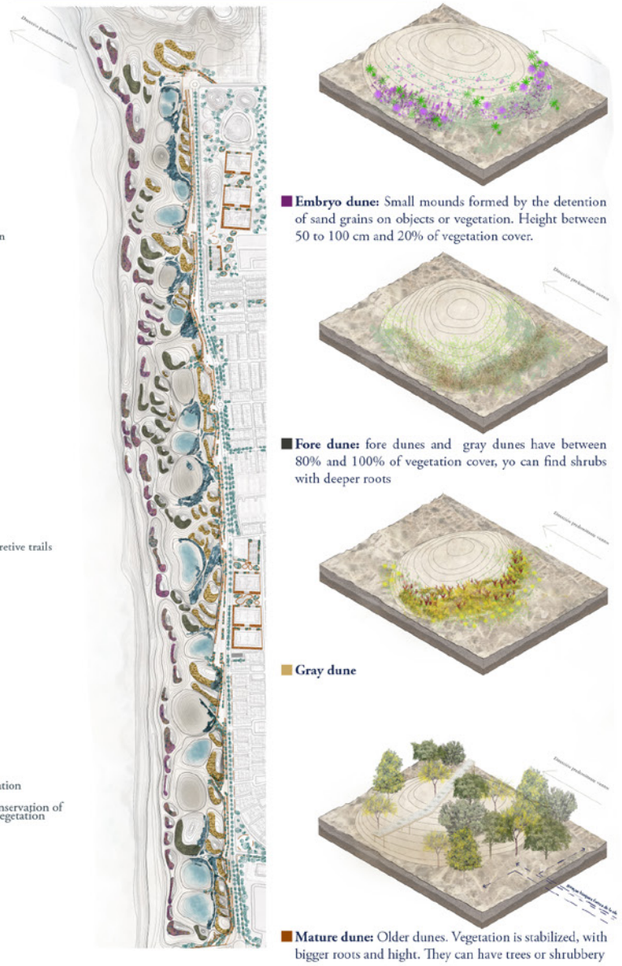
BOCA SUR DUNES PROBLEMS



PROJECT DIAGRAMS



RE-PLANTING THE DUNES: STABILIZATION



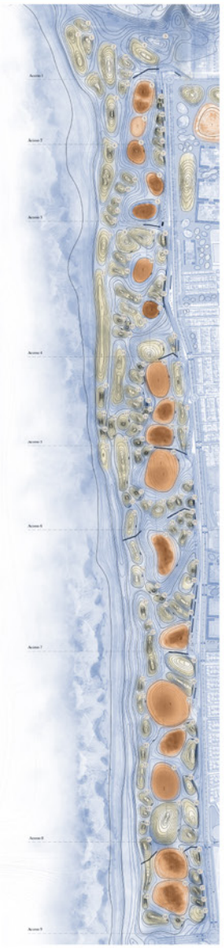
Embryo dune: Small mounds formed by the detention of sand grains on objects or vegetation. Height between 50 to 100 cm and 20% of vegetation cover.

Fore dune: fore dunes and gray dunes have between 80% and 100% of vegetation cover, yo can find shrubs with deeper roots

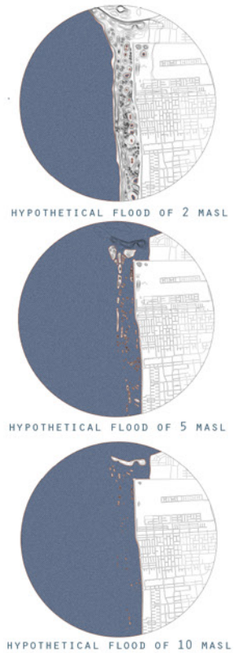
Gray dune

Mature dune: Older dunes. Vegetation is stabilized, with bigger roots and hight. They can have trees or shrubbery

CUT AND FILL: TOPOGRAPHY RESTORATION



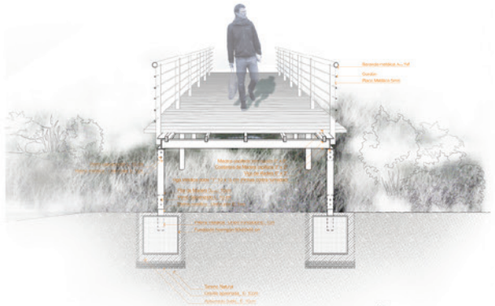
FLOODING SCENARIOS



MASTER PLAN

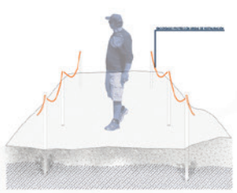
TOPOGRAPHIC MOVEMENTS

NEW CIRCULATION AND USES



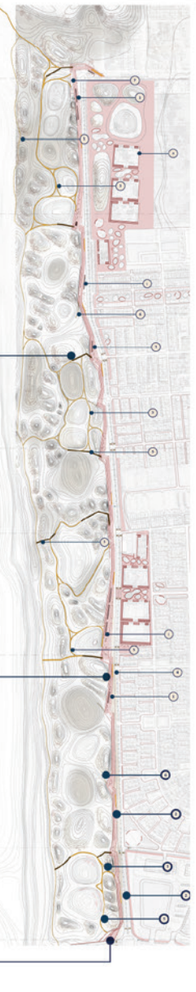
WALKWAY ON DUNES

GABION DETAIL COASTAL WALK



PATHS ON DUNES

SEAT DETAIL



WATERFRONT SECTION

ELEVATED WATERFRONT DUNE PARK