



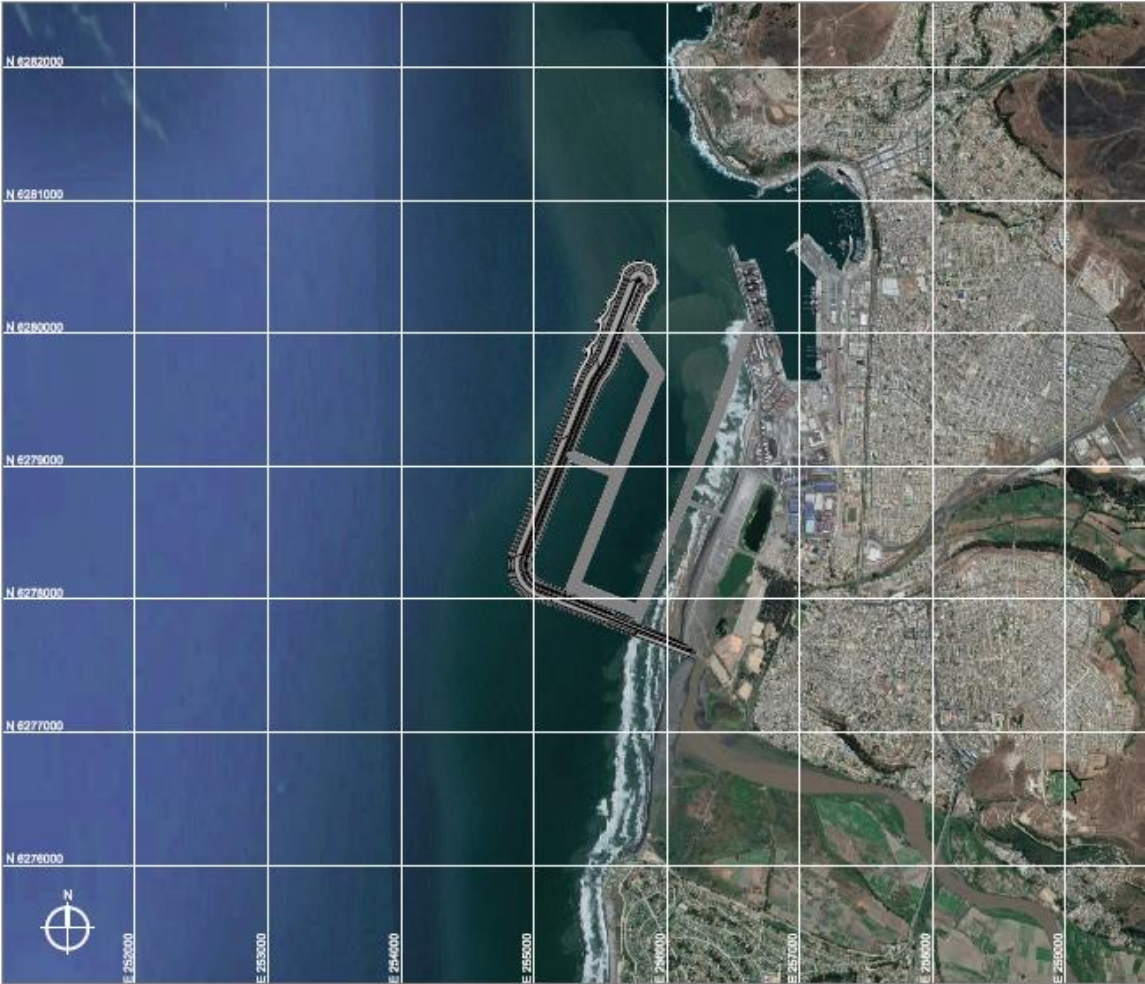
**PUERTO  
SAN  
ANTONIO**

## Alternative use of dredged material: Outer Port Project - San Antonio, Chile

■ March 2022

# OVERVIEW

## GEOGRAPHICAL LOCATION



# WHO ARE WE?

## PUERTO SAN ANTONIO

It is a State company, administrator of the port of San Antonio, created by Law No. 19,542, on the modernization of the state port sector, on January 31, 1998.

Annually our terminals serve about 52% of the country's foreign trade.

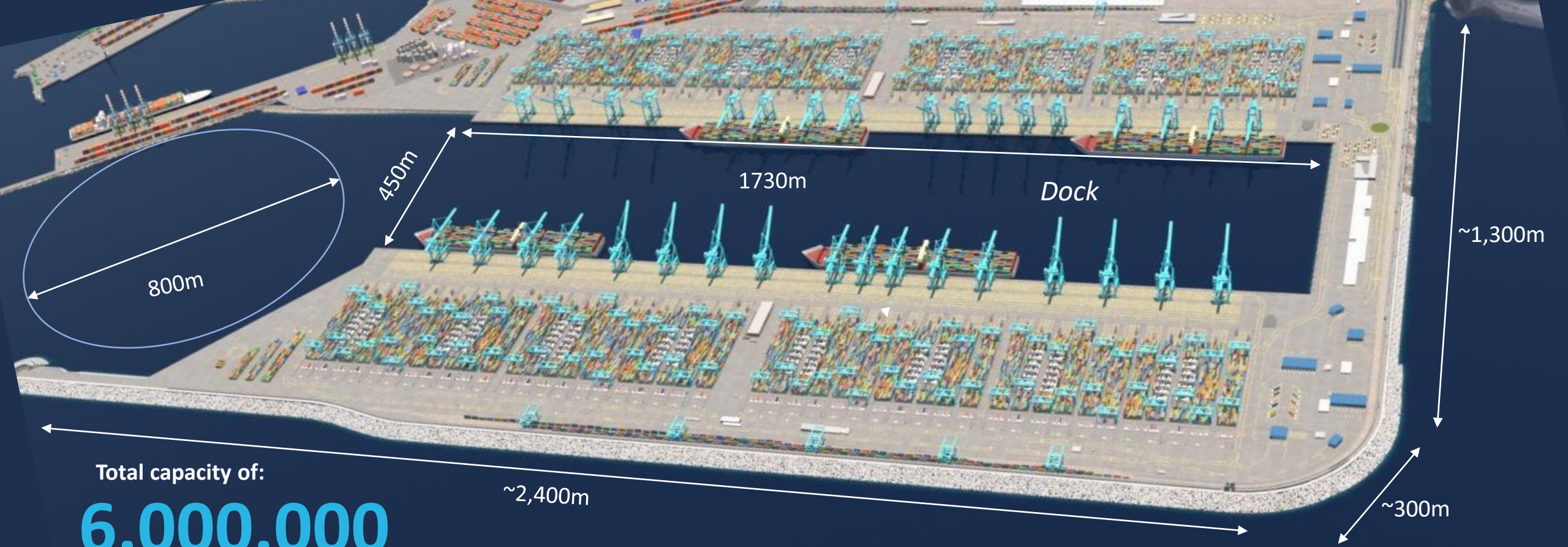


**San Antonio is the 1st port in Chile and the 8th in Latin America, in container cargo (\*).**

**(\*) ECLAC, Latin America and the Caribbean: the port terminal industry and activity indicators for 2019 2019.**

# WHO OPERATES IN PUERTO SAN ANTONIO?





Total capacity of:

**6.000.000**

of annual TEUs

**Design ship:**

Class E container ships

Length: 397.7 M

Beam: 56.4 M

Draught: 15.5 M

Capacity: 14,700 TEUS

**2** Docking  
fronts of  
**1.730** mts



## Relevance

# OUTER PORT

**For central Chile,** it will guarantee the port future by providing jobs and reactivating the local economy (commerce, roads, transport, housing, tourism).

**For the country,** ensure domestic trade in the long term, meeting the demand for new infrastructure in time and increasing the country's international trade competitive.



Total investment:

Approx. investment of the project  
US\$ 3.700 millones

Jobs

2,200 direct jobs in  
construction phase



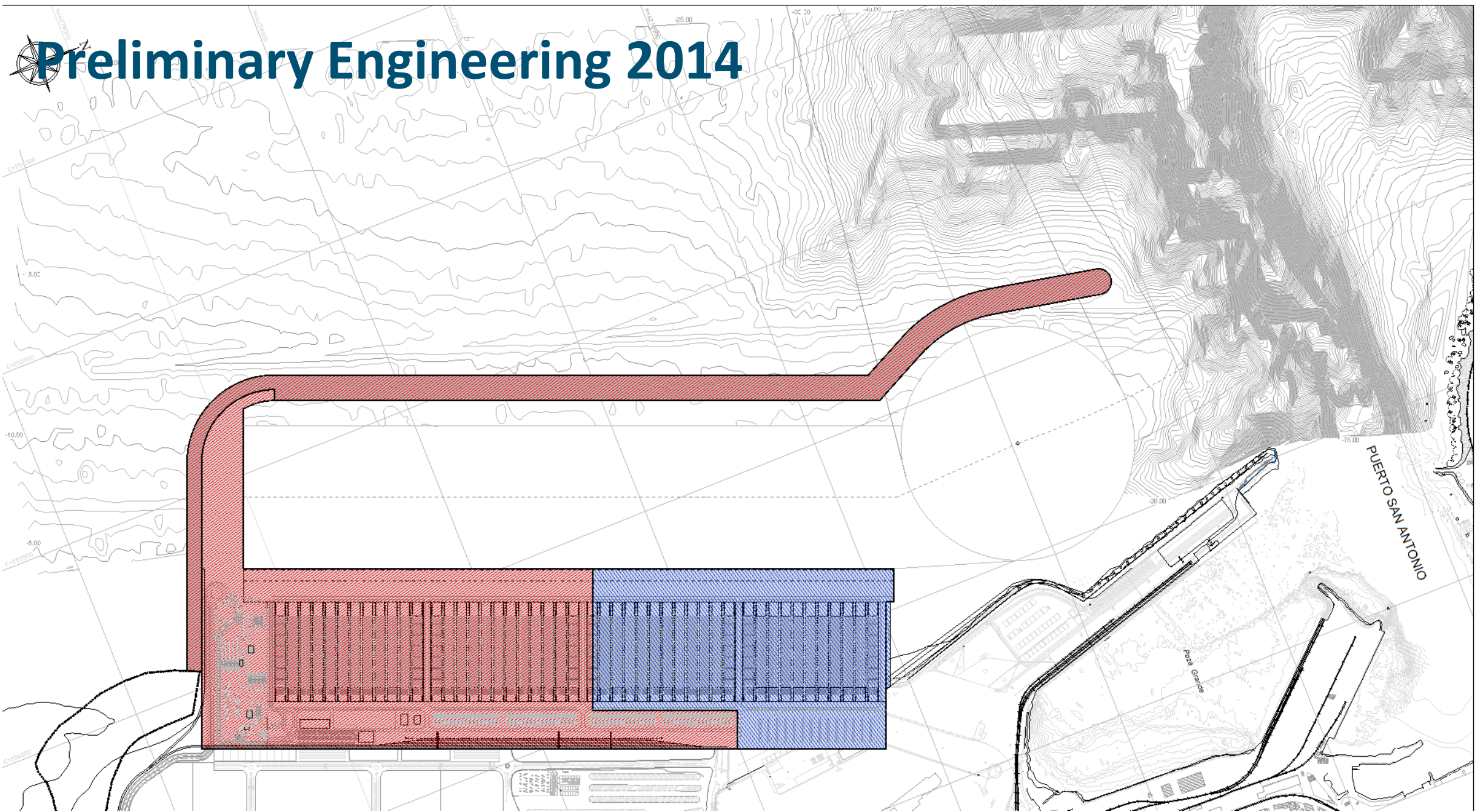
Attention span of ships

8 container ships

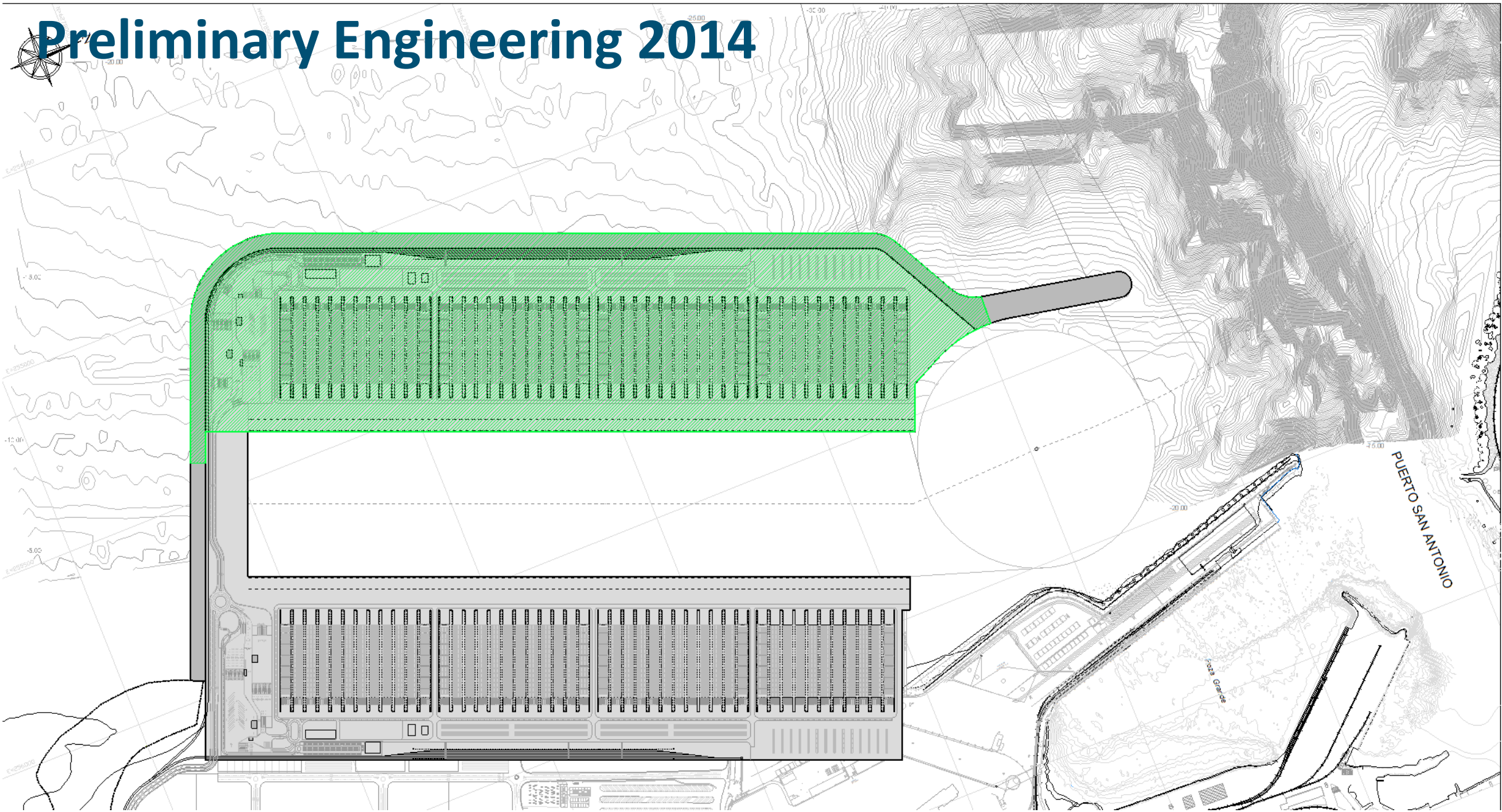
Jobs

2,000 direct jobs in  
operation phase

# Preliminary Engineering 2014

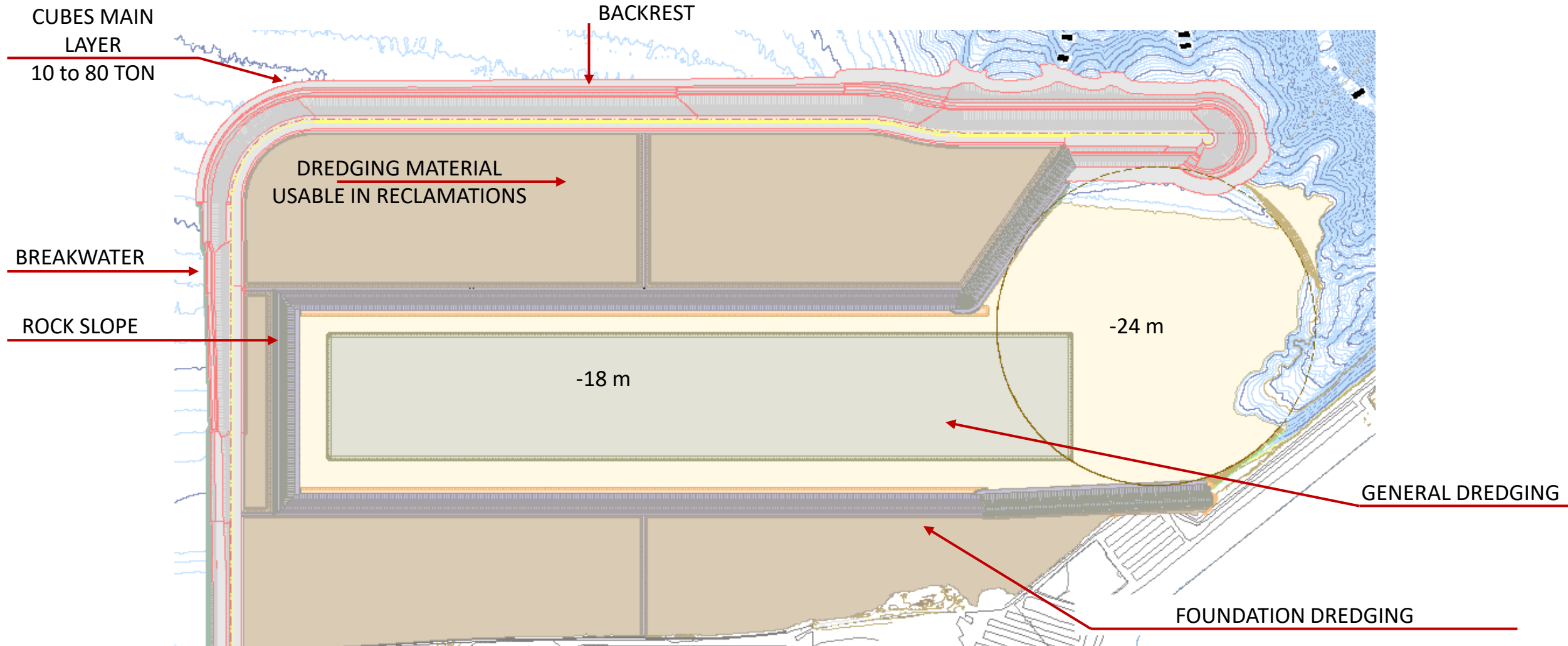


# Preliminary Engineering 2014



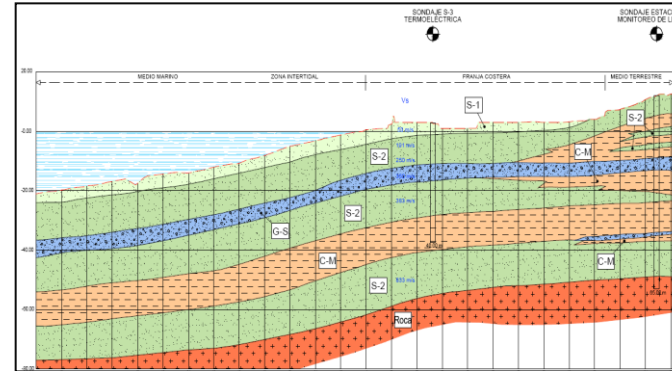
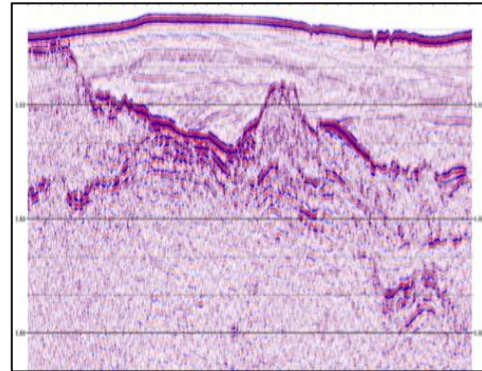
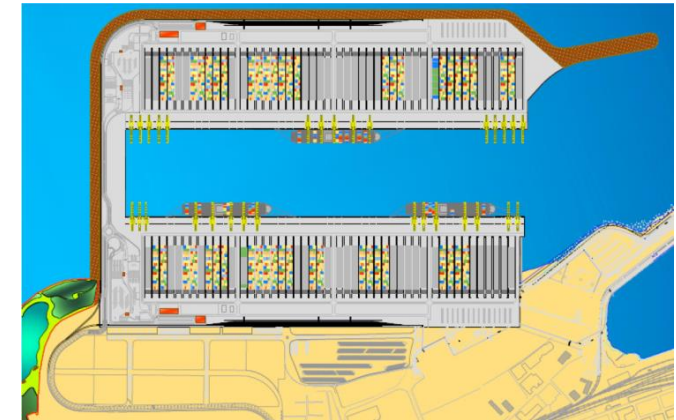
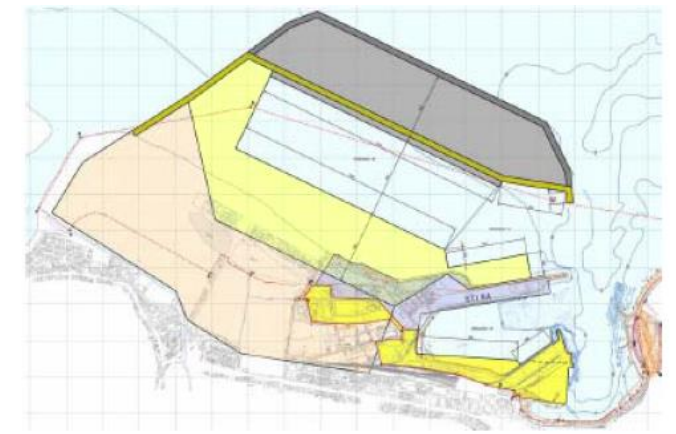


# Final Engineering 2020



- ❑ Feasibility Engineering
- ❑ Basic Engineering
- ❑ Details Engineering of Breakwater and Dredging
- ❑ Scale Model
- ❑ Environmental Baseline
- ❑ Environmental Impact Study
- ❑ Field Studies

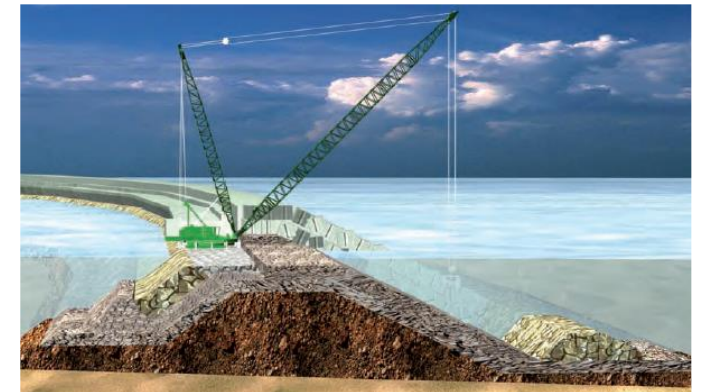
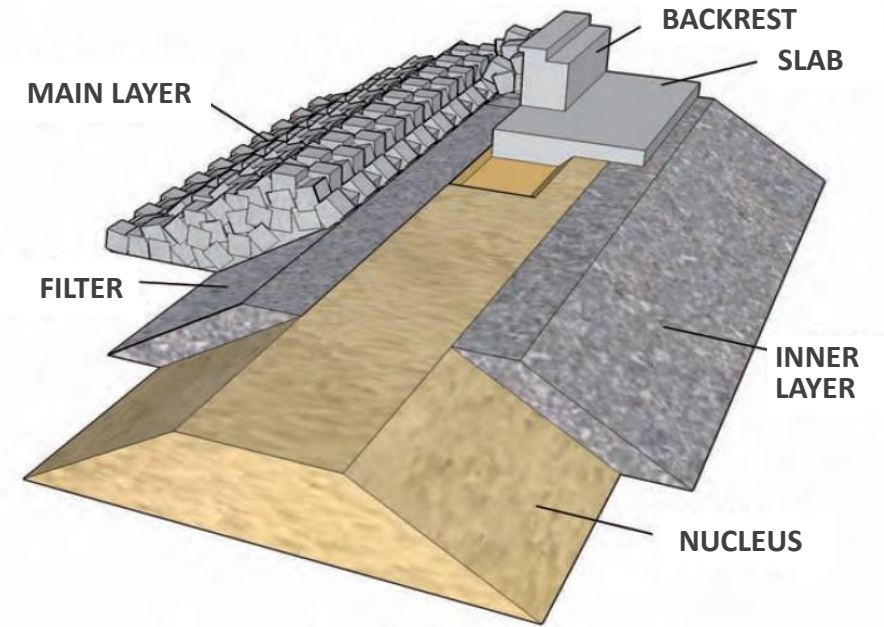
- Laser topography scale 1:500: **20,500 hectares**
- Studies of Tides, Waves, Currents, Winds
- Bathymetry: **1,400 hectares**
- Land Geotechnics: **17 drillholes; 6 test pits, assays**
- Geophysical profiles: **17 km in total**
- Maritime Geotechnics: **26 drillholes (795 m total)**



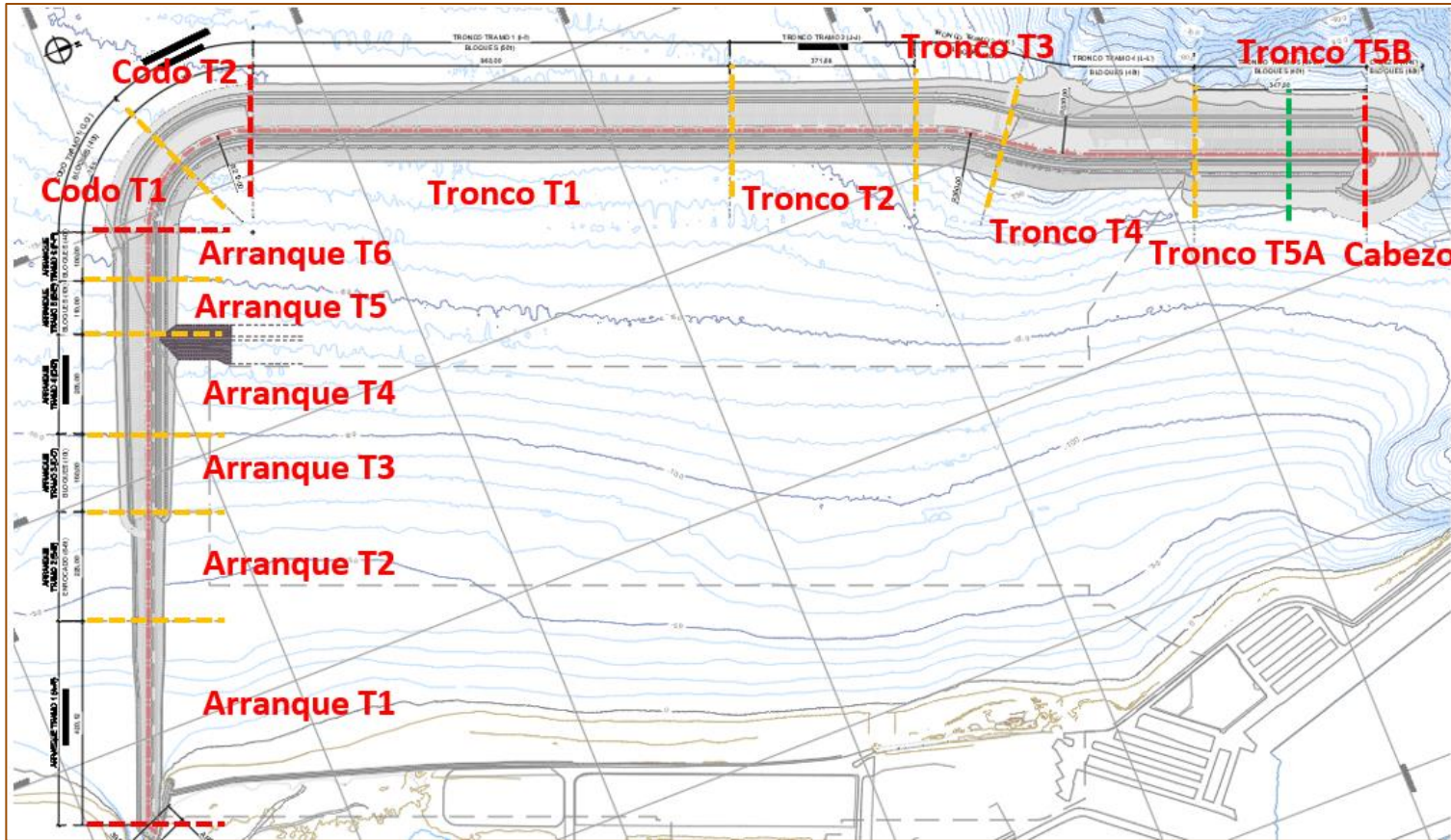
# Breakwater

4,000 meters

Average Depth: 20 meters  
Maximum Depth: 40 meters



# Breakwater



Total length: 4,000 m.

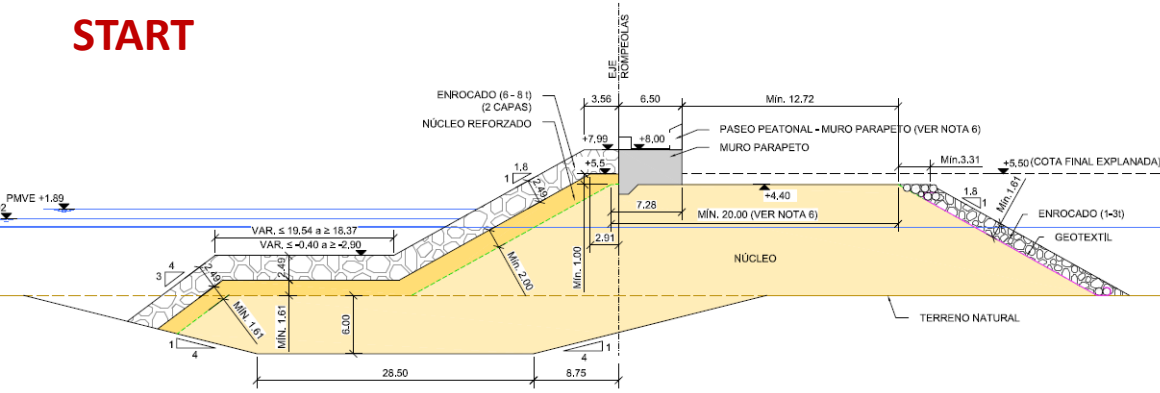
Starting section: 1,260 m with depth at the foot of the breakwater varies from 0 m to 16 m.

Elbow: with a length of approximately 330 m.

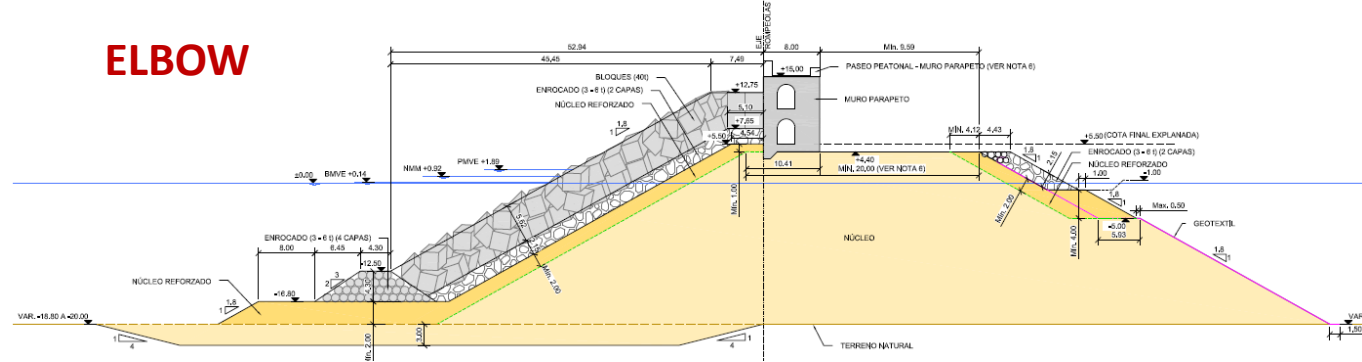
Main Section: 2,245 m in length and whose depth varies between 20 m and 45 m.

# Typical Sections

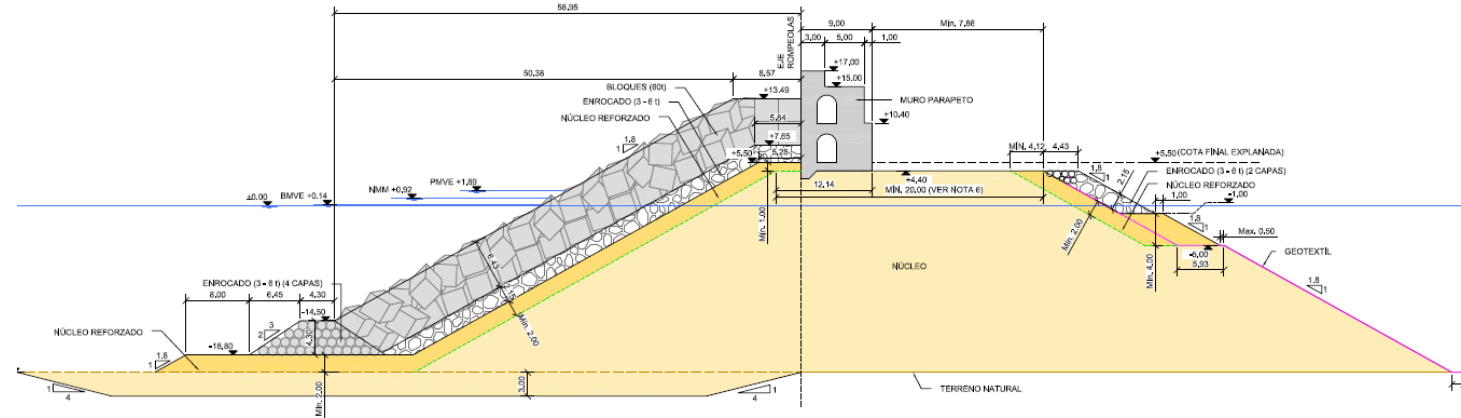
**START**



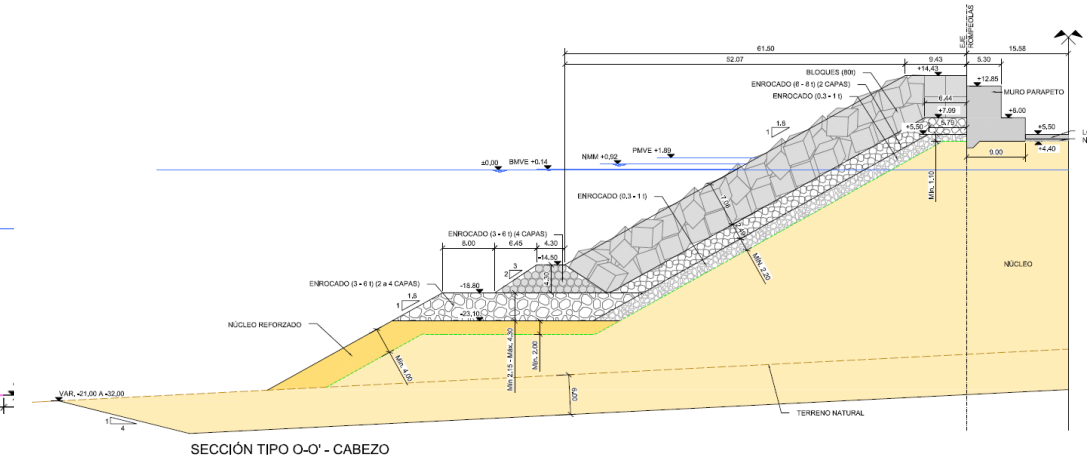
**ELBOW**



**MAIN SECTION**

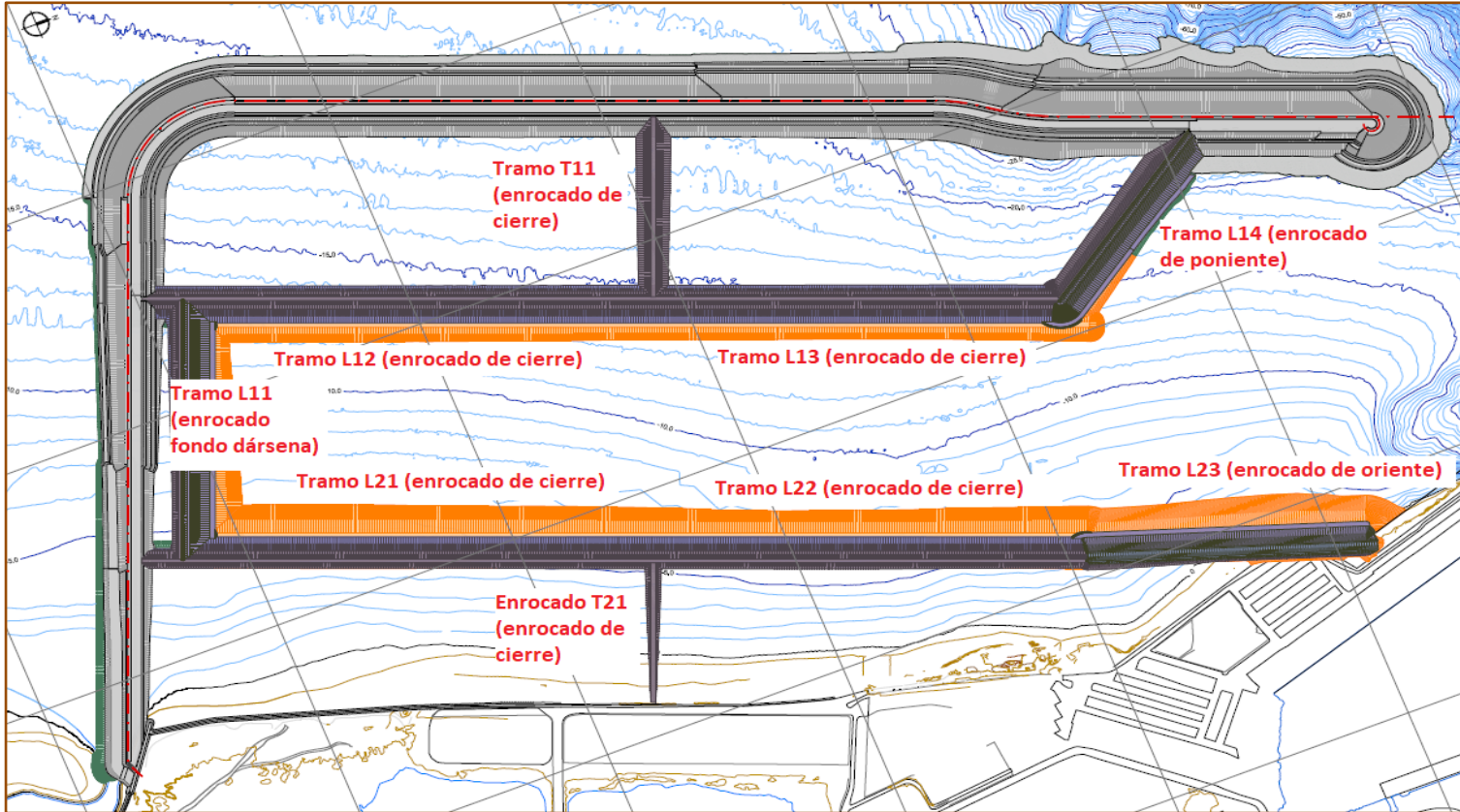


**HEAD**



SECCIÓN TIPO O-O' - CABEZO

# Rock Slopes

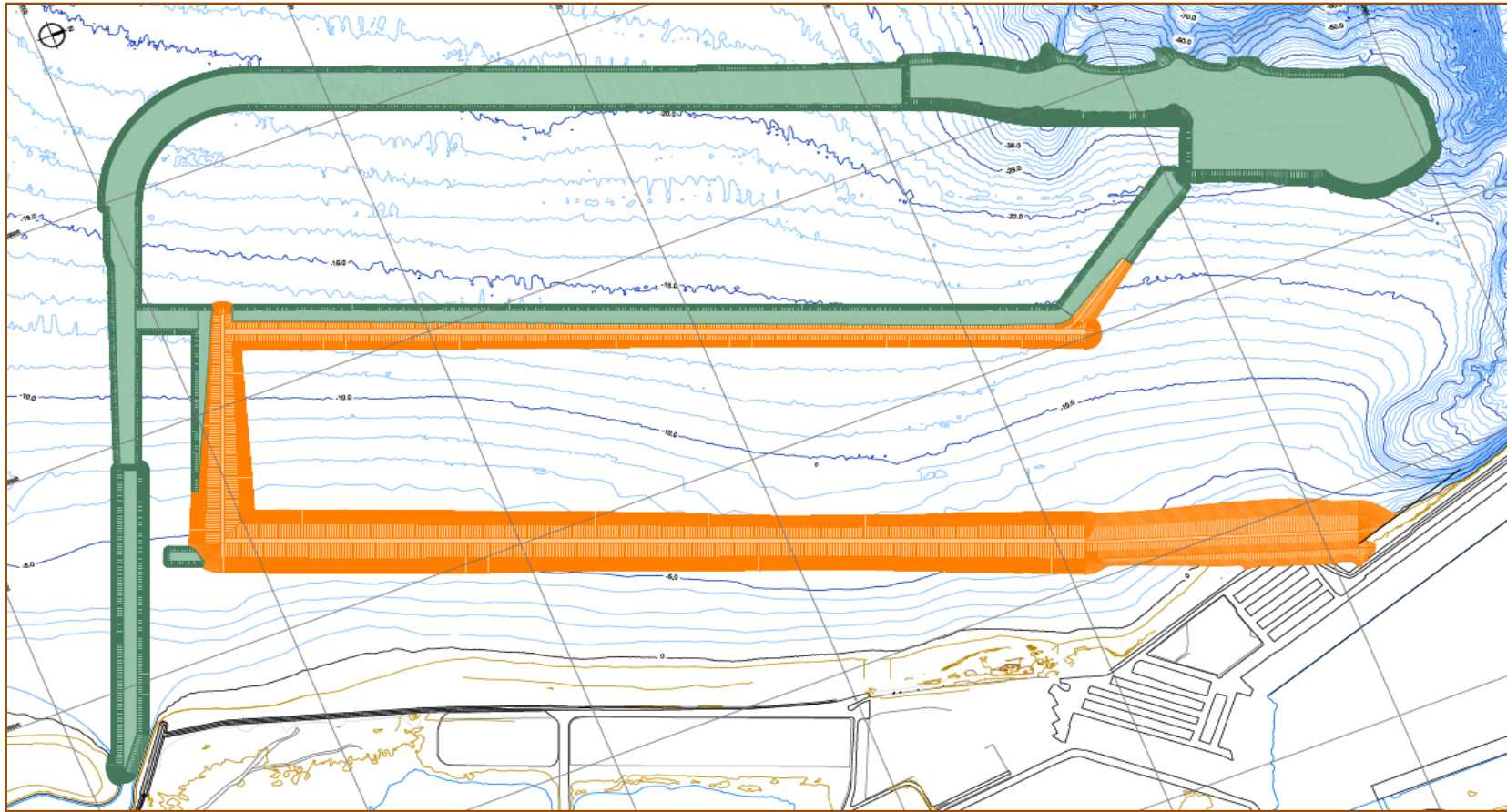


Terminal TS1  
2,300 m

Terminal TS2  
2,500 m

Final Dock  
600 m

# Foundation Dredging



**Surface soil dredging**  
**2.060.000 m<sup>3</sup>**

**Construction dredging**  
**3.430.000 m<sup>3</sup>**

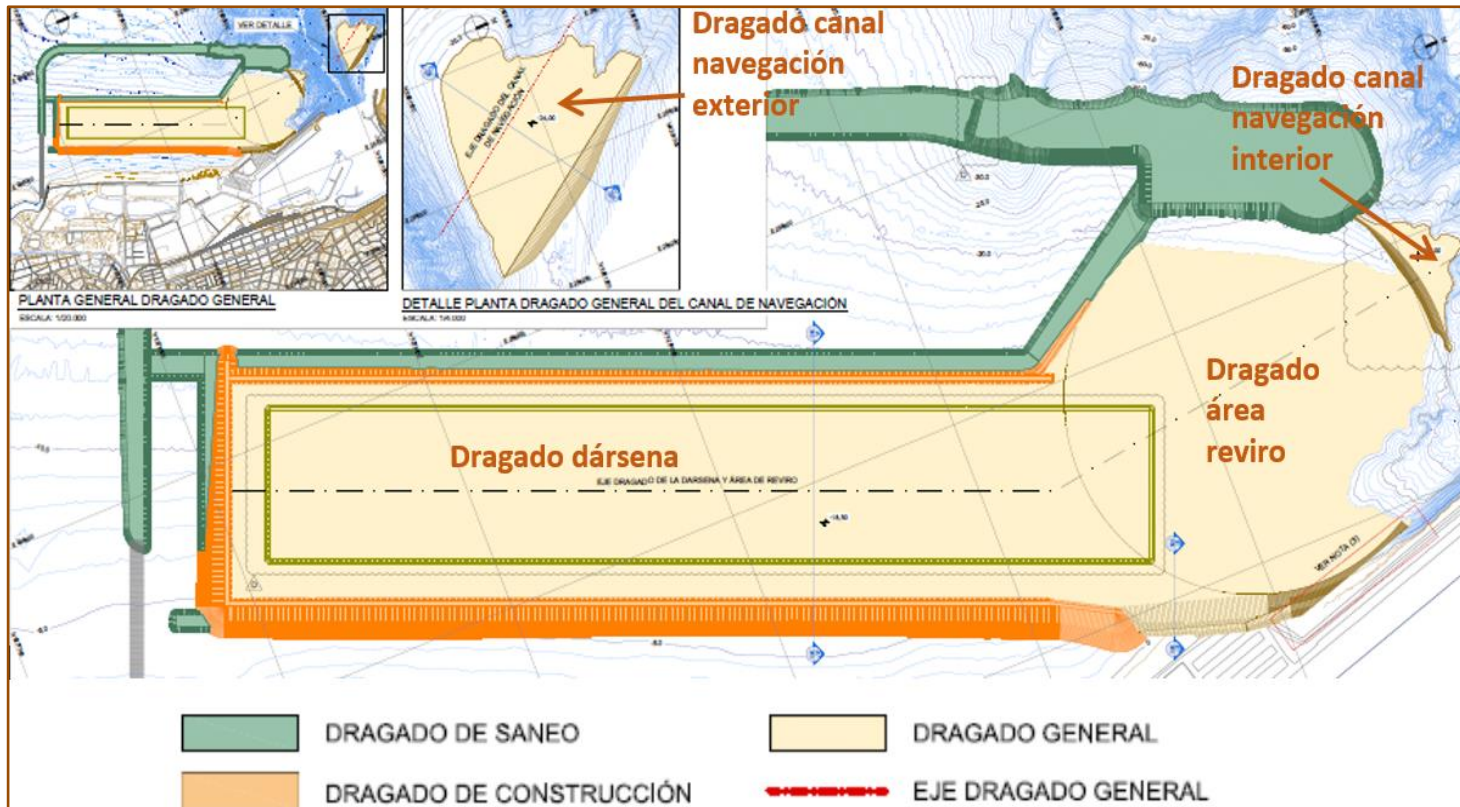
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**TOTAL FOUNDATION  
DREDGING**  
**5.490.000 m<sup>3</sup>**

# General Dredging

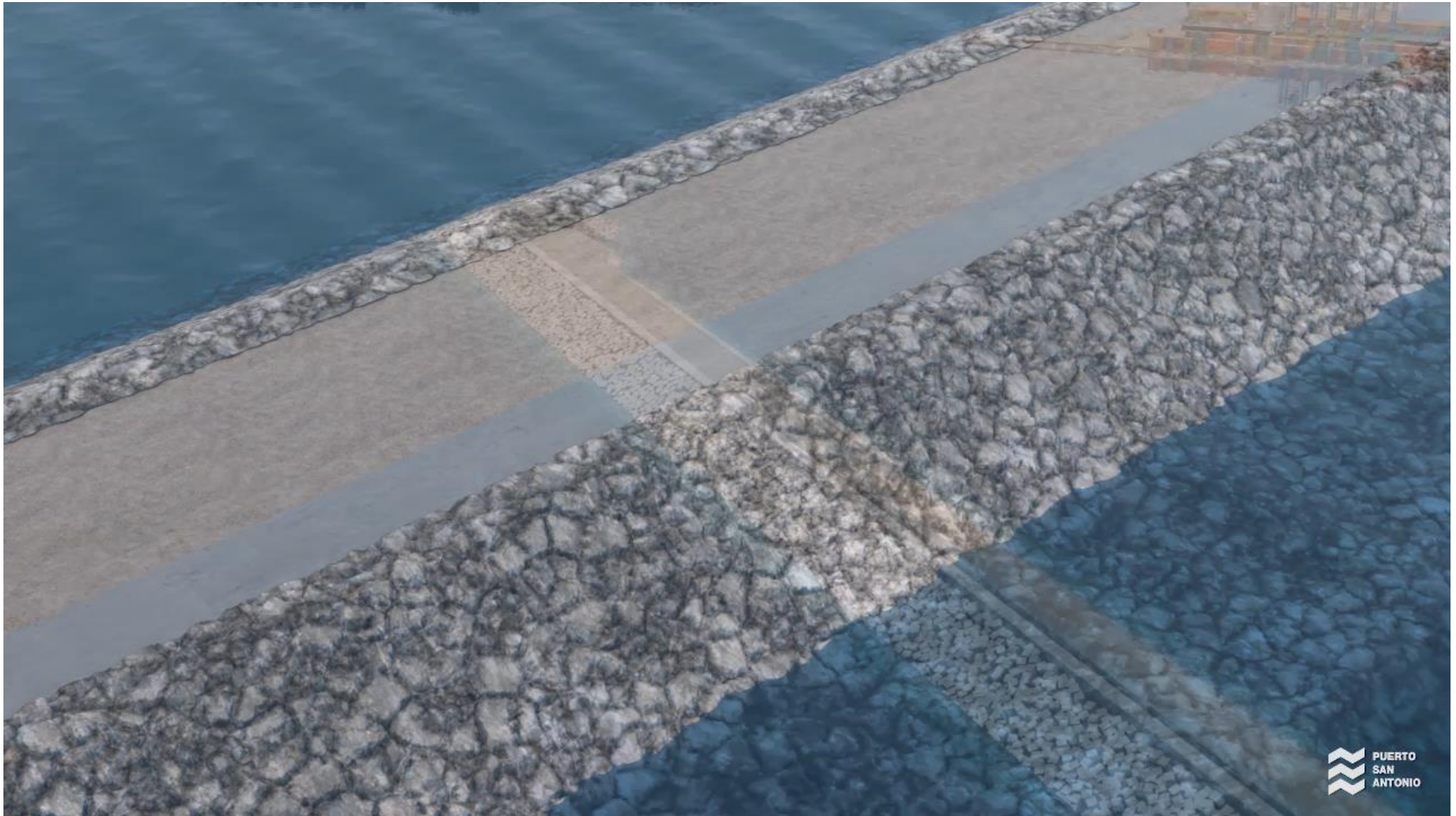
1. Dredging of the dock: 6.123.849 m<sup>3</sup>
2. Dredging maneuvering area: 3.097.771 m<sup>3</sup>
3. Dredging of the inland navigation channel: 67.274 m<sup>3</sup>
4. Dredging of the external navigation channel (Punta Panul): 644.644 m<sup>3</sup>

**TOTAL GENERAL DREDGING**  
**9.933.538 m<sup>3</sup>**





# Construction Process



# Final Comments

- It is possible to give alternative uses to dredging.
- In the case of port projects, dredging can be used to filling reclamation areas.
- Techniques can be considered to structurally improve reclamation built from dredging.



**PUERTO  
SAN  
ANTONIO**

**THANK YOU  
FOR YOUR  
ATTENTION**

■ March 2022