



ALTERNATIVE DEVELOPMENT PLAN FOR CENTRAL CHILE'S PORTS

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Presentation Agenda

- Traffic Forecast
 - Fleet Forecast
- } *Demand Scenarios*
- Existing Plan
 - Alternative Plan
- } *Supply Options*
- Capacity of Plans
 - Capability of Plans
 - Cost of Plans
- } *Comparison*
- *Summary & Conclusions*

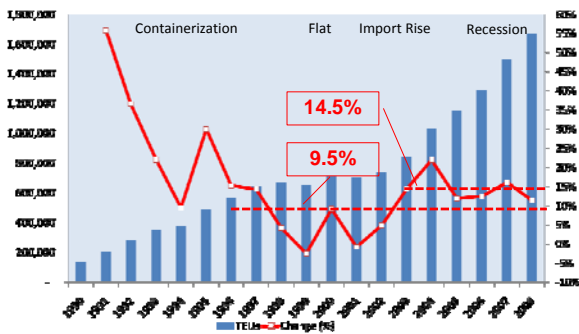
"Fair" Comparison?

- **Capacity** – Handle Forecast Scenarios (TEUs)
- **Capability** – Handle Future Ships (Depth, Turning Basin, Berth Length, Yard Area)
- **Cost** – Only Basic Infrastructure
 - Per Capacity Unit (\$/ TEU)
 - Per Berthage (\$/m)
 - Per Yard Area (\$/ha)
- **Market Structure** – Retain Competition
- **Environmental Impacts**

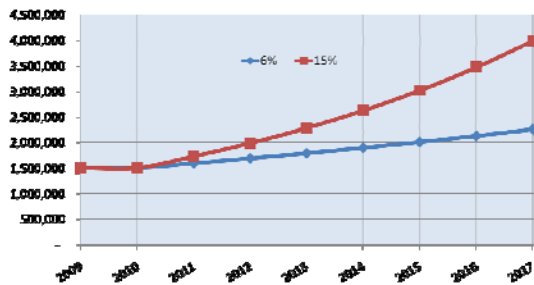
Decision Making Process

- **General Direction** -- General Guidance to avoid Duplication and Waste of Public Monies
- **Project Selection** -- No! and No Central Planning
- **Preliminary** -- a Small-Budget Study; Requires Further Investigations, but *Sufficient for initial Decision Making*
- **Conservative Approach** -- Favors Existing Plan in the comparison

Past Traffic Developments



Forecast Scenarios



Present and Future Ships

Category	Name	Operator	Capacity (TEUs)	Dimensions LOA x Beam x Draft (m)	Arrangement Under-Below-Across (rows)
Sub Panamax	Cap San Antonio	HSD	3,700	252 x 32.2 x 12.5	8 - 6 - 13
Panamax - Max	Zim Savannah	Zim	5,000	295 x 32.3 x 13.5	8 - 6 - 13
Post Panamax I	Monte Class III	HSD	6,300	300 x 40 x 13.5	9 - 5 - 16
Post Panamax II	Sovereign Maersk	Maersk	8,000	347 x 42.8 x 14.5	9 - 6 - 18
Post Panamax III	New Panamax (NPX)	---	12,500	366 x 49 x 15.2	10 - 6 - 19/20
Post Panamax III	MSC Daniela	MSC	13,800	366 x 51.3 x 15	10 - 6 - 20
Post Panamax III	Emma Maersk	Maersk	14,500	396 x 56.4 x 15.5	10 - 6 - 22

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Existing vs. Alternative Plan

- **Existing Plan** (EPSA & EPV) –
 - Short Term: **Minor Extension of Present Terminals**
 - Mid Term: **New Terminals** in San Antonio (Espigon) and Valparaiso (Terminal 2)
- **Alternative Plan** (AA & PW) –
 - Short Term: **Meaningful Expansion of Present Terminals**
 - Long Term: **Outer Terminal**
- **Only Containers**

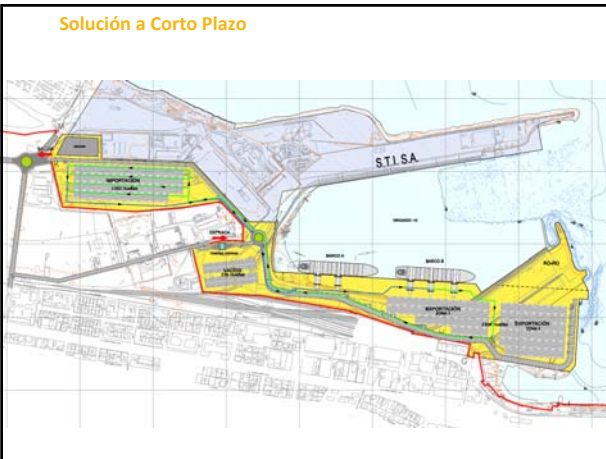
San Antonio Harbor



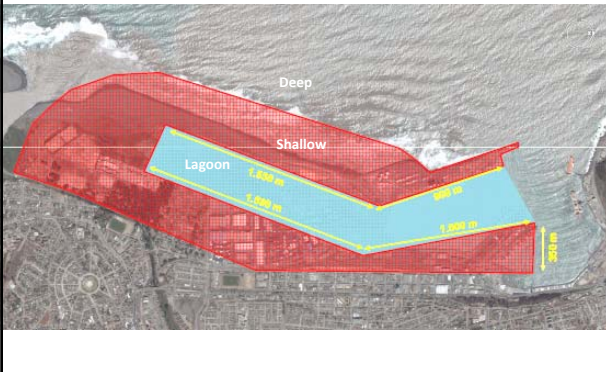
San Antonio's New Espigon Terminal



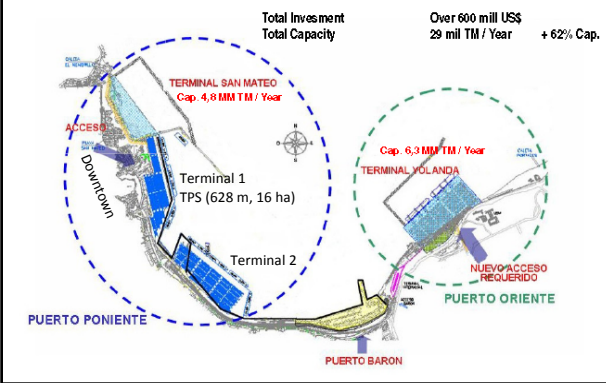
Solución a Corto Plazo



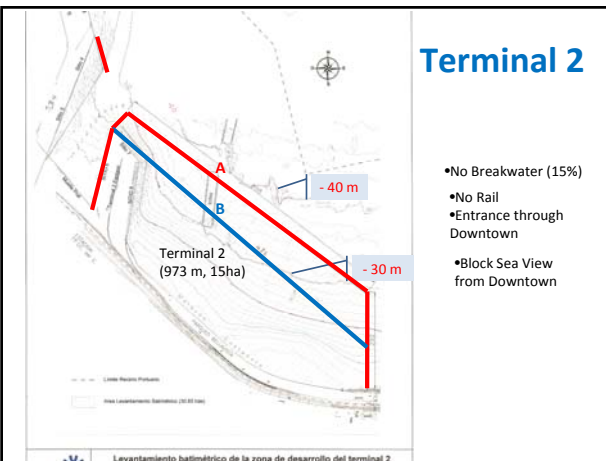
San Antonio 2020 – 2030 Plan



Valparaiso Long-Term Plan

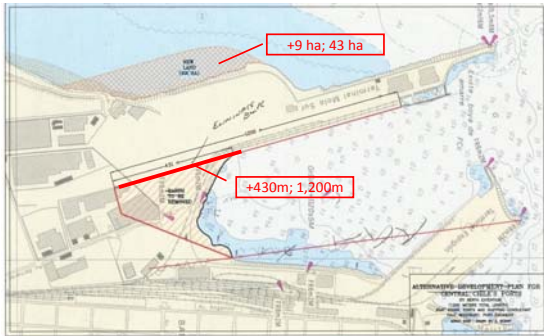


Terminal 2

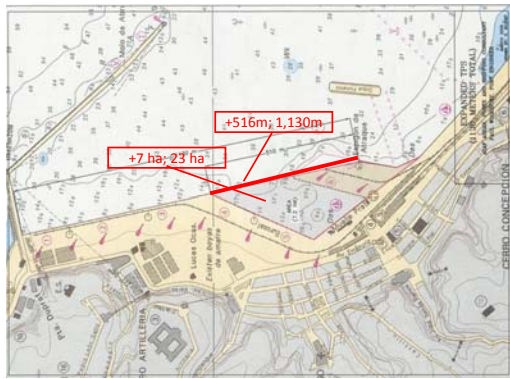


- No Breakwater (15%)
- No Rail
- Entrance through Downtown
- Block Sea View from Downtown

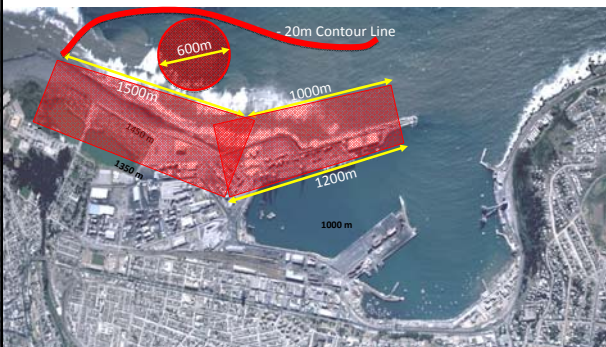
Expanded STI, San Antonio



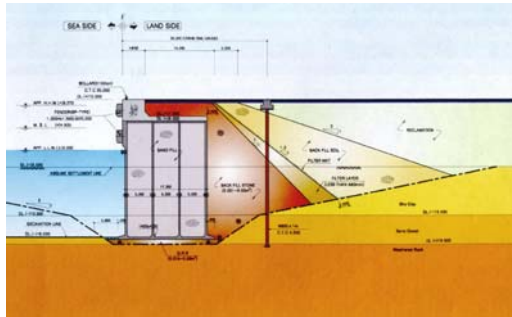
Expanded TPS, Valparaiso



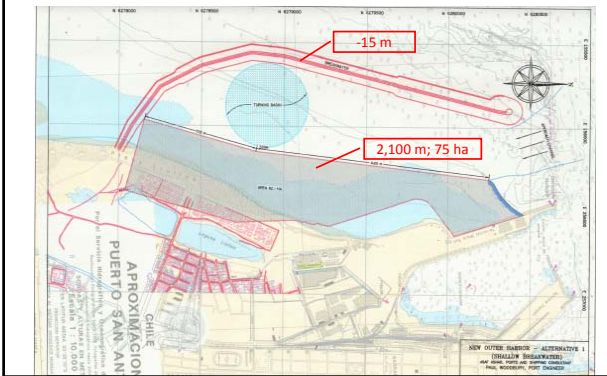
Outer Harbor Expansion



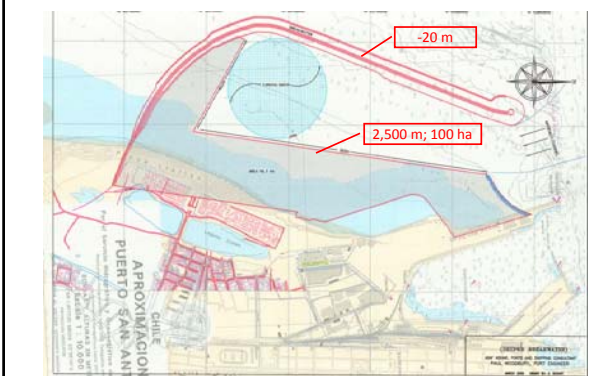
Caisson Type Dock (Breakwater?)



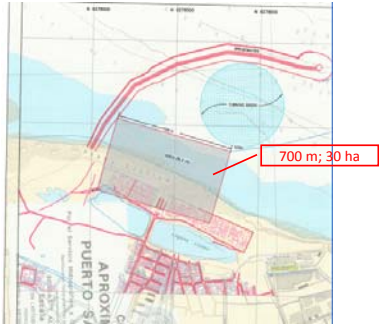
Outer Harbor – Minimum Option



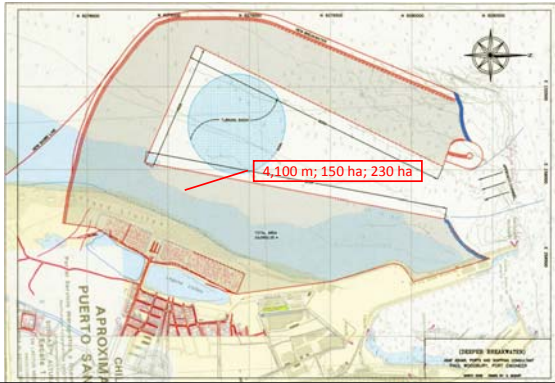
Outer Harbor – Maximum Option



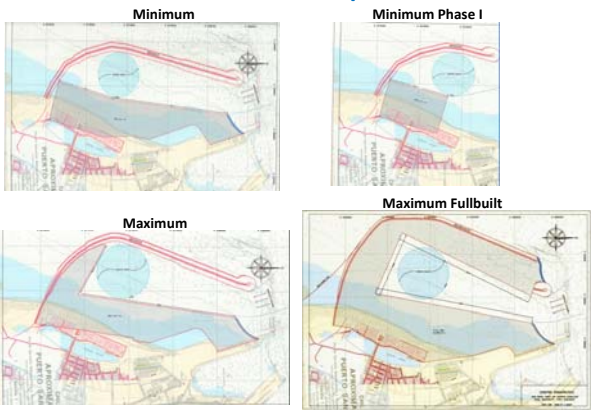
Outer Harbor – Minimum Phase I



Outer Harbor – Maximum Builtout



Outer Harbor Options



Presentation Agenda

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|---|--|
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Berth Capacity Indicators

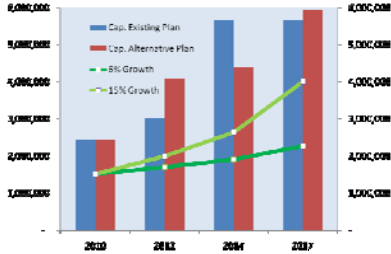
Year	Type of Berth	Berth Length (m)	Depth Alongside (m)	Berths per Terminal	Design Ship	Berth Capacity (TEUs)	Berth-m Capacity (TEUs/m)
2009	Sub Panamax	250	12	3	3,000	350,000	1,400
2012	Panamax	280	14	3	4,500	450,000	1,607
2012	Panamax	280	14	4	4,500	495,000	1,768
2014	Post Panamax I	300	15	3	5,700	500,000	1,667
2014	Post Panamax I	300	15	4	5,700	550,000	1,833
2017	Post Panamax II	350	16	4	8,000	700,000	2,000
2025	Post Panamax III	400	16 - 18	4	12,000	1,000,000	2,500
2009	Multipurpose	150	10 - 11	2	1,000	100,000	667

Capacity of Present Terminals

Terminal	Berth age	Draft	Berths	TEUs/Berth	TEUs
San Antonio STI	769	14	3	350,000	1,050,000
San Antonio Espigon	340	9.5	2	100,000	200,000
Subtotal San Antonio					1,250,000
Valparaiso TPS -- Berth 1, 2 & 3	628	11.4	2.5	350,000	875,000
Valparaiso TPS -- Berth 4 & 5	337	9.4	2	100,000	200,000
Valparaiso Espigon	180	8.5	1	100,000	100,000
Subtotal Valparaiso					1,175,000
2010 -- Total					2,425,000

Capacity vs. Forecast

Year	Capacity -- Existing Plan	Capacity -- Alternative Plan	Forecast -- 6% Growth	Forecast -- 15% Growth
2010	2,425,000	2,425,000	1,500,000	1,500,000
2012	2,999,000	4,050,000	1,685,400	1,983,750
2014	5,649,000	4,380,000	1,893,715	2,623,509
2017	5,649,000	5,908,571	2,255,445	3,990,030



Infrastructure Unit Costs

Construction Element	Unit	Cost per Unit (\$, US)
Berths (Muelles)	Linear Meter	121,000
Structural Steel	Ton	2,200
Sheet Pile Placement	Linear Meter	1,900
Excavation	Cubic Meter	25
Dredging	Cubic Meter	6.5
Hydraulic Fill	Cubic Meter	9
Quarry Run or Select Fill	Cubic Meter	25
Dewatering Hydraulic Fill	Hectare	10,000
Dynamic Compaction	Hectare	24,000
Finish Grading	Hectare	12,500

Cost of Existing Plan

Project	Berth	Total TEUs	Total	\$/TEU
San Antonio STI	900	1,350,000	20,306,130	67.7
San Antonio Espigon	340	200,000	-	
Subtotal San Antonio	1,550,000	-		
Valparaiso TPS -- Berth 1, 2 & 3	750	1,149,000	35,562,450	129.8
Valparaiso TPS -- Berth 4 & 5	337	200,000	-	
Valparaiso Espigon	180	100,000	-	
Subtotal Valparaiso	1,449,000	-		
2012 -- Subtotal	2,999,000	-		
San Antonio STI	900	1,500,000	-	
San Antonio New Espigon	1,000	1,500,000	158,262,014	105.5
Subtotal San Antonio	3,000,000	-		
Valparaiso TPS -- Berth 1, 2 & 3	750	1,149,000	-	
Valparaiso TPS -- Terminal 2	983	1,500,000	198,849,350	132.6
Subtotal Valparaiso	2,649,000	-		
2014 -- Subtotal	3,633	5,649,000	-	
Total Cost			412,979,944	128.1

Cost of Alternative Plan

Project	Berth	Total TEUs	Total	\$/TEU
San Antonio STI - Expanded	1,200	1,980,000	65,875,349	70.8
San Antonio Espigon	340	200,000	-	
Subtotal San Antonio		2,180,000	-	
Valparaiso TPS -- Expanded	1,130	1,870,000	65,292,200	65.6
Subtotal Valparaiso		1,870,000	-	
2012 -- Subtotal		4,050,000	-	
San Antonio STI - Extended	1,200	2,445,000	-	
San Antonio Espigon	340	200,000	-	
San Antonio Outer Harbor Phase I	700	928,571	195,726,160	210.8
Subtotal San Antonio		3,573,571	-	
Valparaiso TPS -- Expanded	1,220	2,335,000	-	
Subtotal Valparaiso		2,335,000	-	
2017 -- Subtotal	3,460	5,908,571	-	
Total Cost			326,893,709	93.8

Cost Comparison

Plan	Capacity (TEUs)			Infrastructure Cost		Unit Cost	
	2012	2017	Difference	(\$)	Differ.	(\$/TEU)	Differ.
Existing Plan	2,999,000	5,649,000	2,650,000	412,979,944	100%	128.1	100%
Alternative Plan	4,050,000	5,908,571	1,858,571	326,893,709	79%	93.8	73%
Alternative -- Existing	1,051,000	259,571		(86,086,236)	-21%	(34.3)	-27%

Summary & Conclusion

- **Existing Plan** – Small Terminals, Odd Shape, No Rail, Difficult Land Access, No Support Facilities, Problems in Navigations, Difficulties in Serving Future Post-Panamax
- **Alternative Plan** – New Spacious Harbor, Large Terminals, Accommodates Traffic to 2035 and beyond
- **Extension of Present Terminals** – Relatively Easy and Cost Effective, *Retains Competition (Tariff Control)*
- **Savings** -- Alternative Saves \$86 million, or 27% of Infrastructural Cost
- **Other Cargoes** -- Outer Harbor has sufficient space for Non-Container Cargoes



THANK YOU!

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