PROJECT SHOWCASE ON RECENT DEVELOPMENTS AND BEST PRACTICES IN MARITIME INFRASTRUCTURE BUILD UP

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PRESENTATION BY

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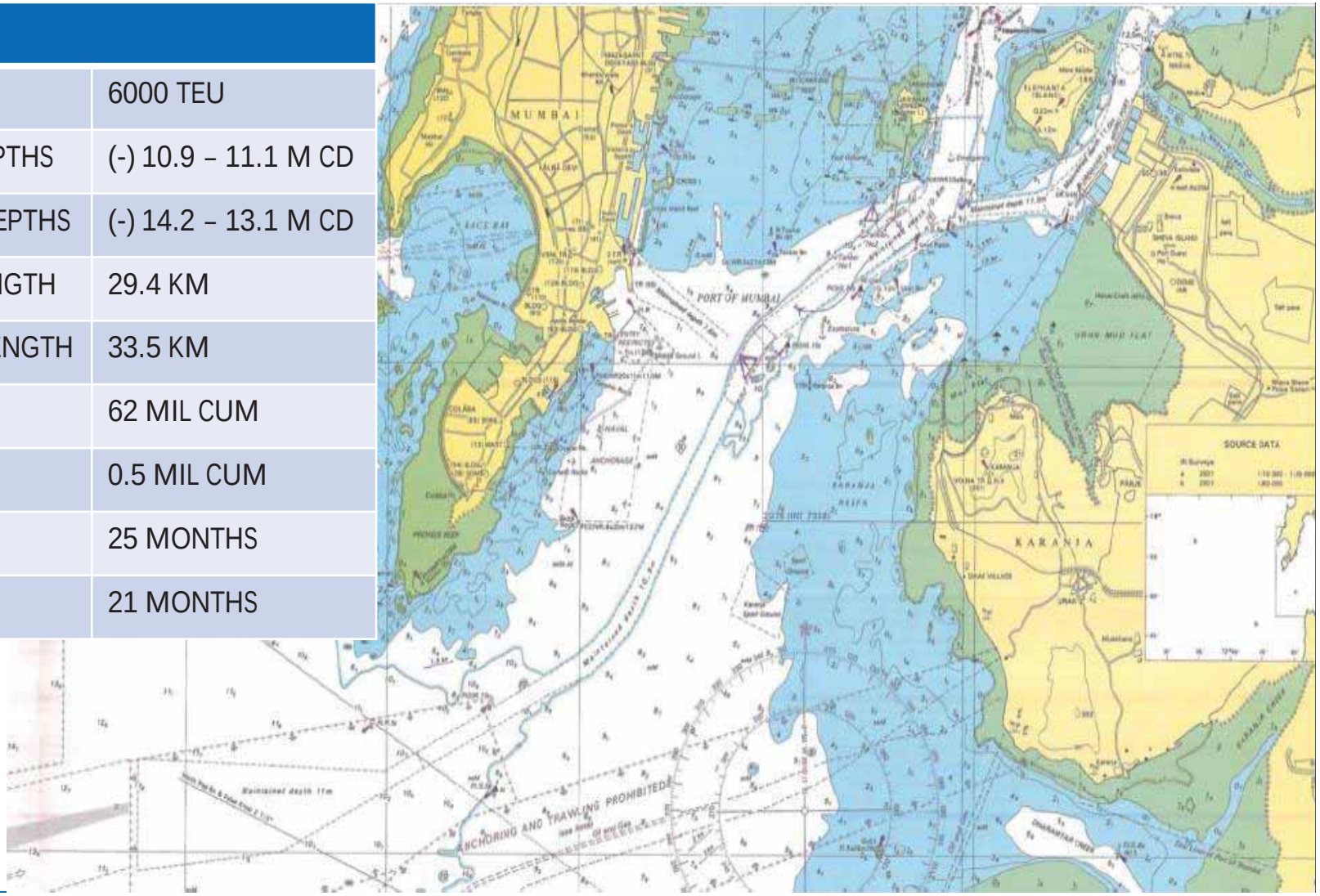
BEST PRACTICES IN MARITIME INFRASTRUCTURE BUILD UP

1. COMPLIANCE TO ENVIRONMENTAL STANDARDS
2. COMPLIANCE TO INTERNATIONAL ENGINEERING BEST PRACTICES
3. ENERGY MANAGEMENT
4. VALUE ENGINEERING
5. AGILITY – READEPT TO CHANGING / RISING TRADE FLOWS

CONTENTS OF PROJECT SHOWCASE

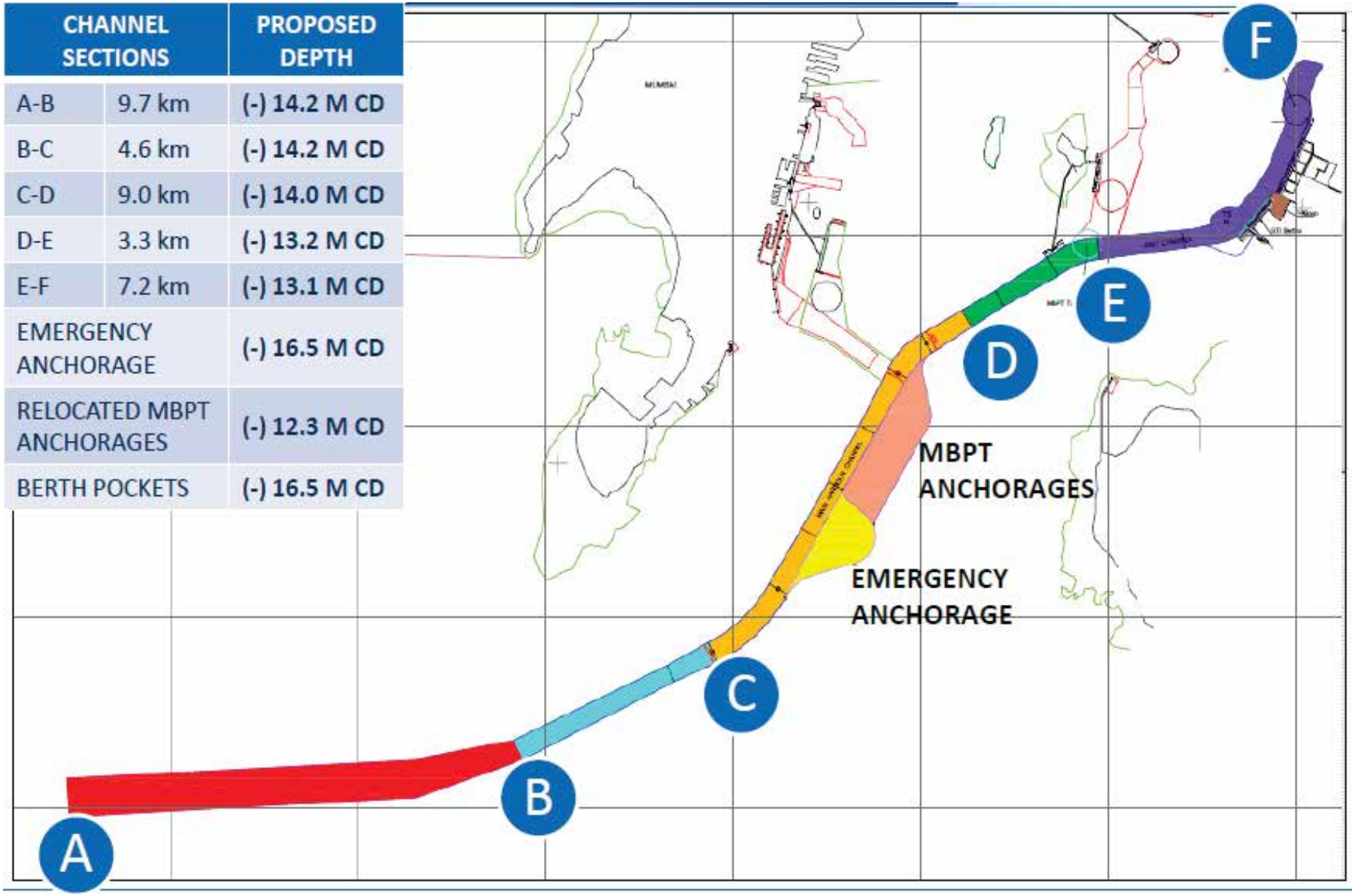
Layout of channel prior to deepening & widening

SALIENT FEATURES	
DESIGN VESSEL	6000 TEU
PRE DREDGING DEPTHS	(-) 10.9 – 11.1 M CD
POST DREDGING DEPTHS	(-) 14.2 – 13.1 M CD
PRE DREDGING LENGTH	29.4 KM
POST DREDGING LENGTH	33.5 KM
SOIL DREDGING	62 MIL CUM
ROCK DREDGING	0.5 MIL CUM
EST DURATION	25 MONTHS
ACTUAL DURATION	21 MONTHS



PHASE I CHANNEL DEEPENING PROJECT AT JNPT

CHANNEL SECTIONS		PROPOSED DEPTH
A-B	9.7 km	(-) 14.2 M CD
B-C	4.6 km	(-) 14.2 M CD
C-D	9.0 km	(-) 14.0 M CD
D-E	3.3 km	(-) 13.2 M CD
E-F	7.2 km	(-) 13.1 M CD
EMERGENCY ANCHORAGE		(-) 16.5 M CD
RELOCATED MBPT ANCHORAGES		(-) 12.3 M CD
BERTH POCKETS		(-) 16.5 M CD



PHASE I CHANNEL DEEPENING PROJECT AT JNPT

Cost standards indexation 2013

Guide to cost standards for dredging equipment indexation 2013.

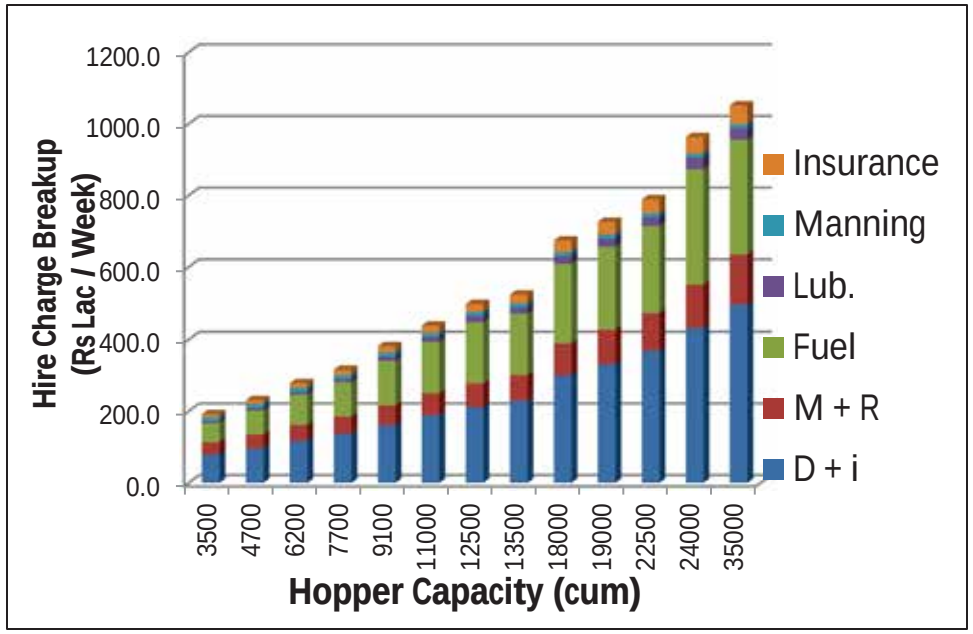
CIRIA Publication C684 A guide to cost standards for dredging equipment 2009 gives the replacement value ex-works, yard or importer and exclusive of VAT, in Europe on 1 January 2009 for several types of dredging equipment. The values given in this publication have now been indexed as per 1 January 2013.

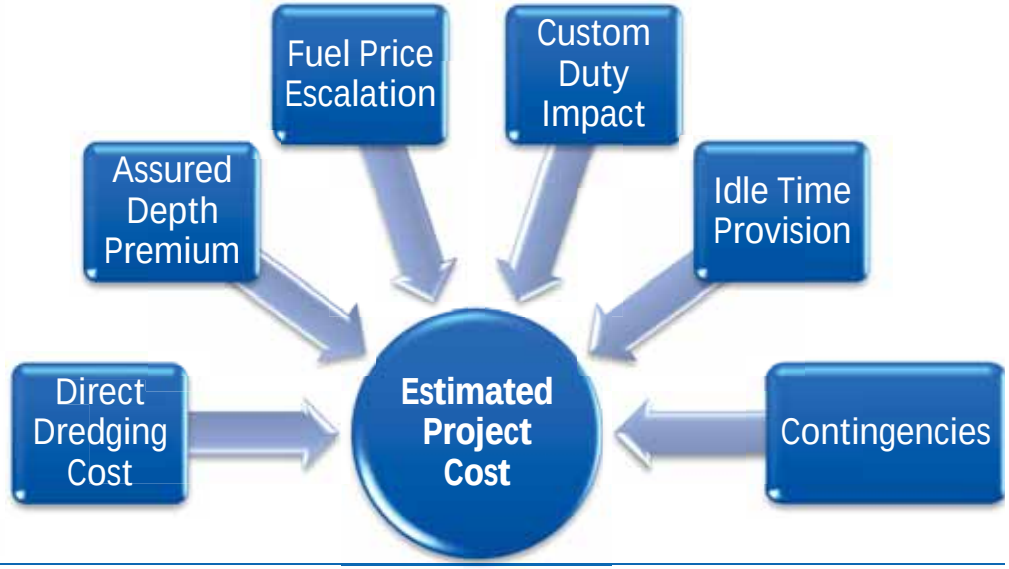
Since there is no specific European index for ship building and/or hull structures available, IADC has assessed the indexation 2013 using the following Eurostat indices:

- C2511 (Manufacture of metal structures and part of structures) for hull steel
- C 242 (Manufacture of tubes, pipes, hollow profiles and related fittings, of steel) for steel pipelines
- C2211 (Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres) for rubber pipelines and pressure hoses
- C2811 (Manufacture of engines and turbines, except aircraft, vehicle and cycle engines)
- C2813 (Manufacture of other pumps and compressors)

The assessed indices that are shown in the table are all based on the appropriate weighted combinations of last years' Eurostat indices.

Group	CIRIA Category	Description	Index 1-1-2013
a	100; 101; 610; 620; 630	Trailing suction hopper dredgers; Side stone-dumping vessels; Inland, self-propelled hopper vessels (with suction or trailing pipe); Sea-going, self-propelled dumping barges	104
b	200; 201; 202; 310; 320; 330	Cutter suction dredgers; Suction dredgers; Barge-loading suction dredgers; Barge-unloading dredgers	105
c	400; 401	Boosters	107
d	710; 711	Jack-ups	103
e	510; 511; 520; 521; 530; 621; 631; 632; 633	Backhoe dredgers; Pontoon with excavators on tracks; Grab dredgers; Pontoons with cable cranes on tracks; Bucket dredgers; Inland, self-propelled hopper vessels (without suction or trailing pipe); Dumping barges (not sea-going)	103
f	622; 810; 850	Inland hopper barges; Pontoons; Derrick barges	101
g	820; 821; 822; 830; 831; 832; 840	Multi-purpose pontoons; Tugboats; High speed crew and survey launches	105
h	920; 931; 941; 91x	Steel Pipelines	102
i	930; 942	Self-floating rubber pipelines; Pressure hoses	105





JNPT PHASE I DREDGING - DREDGER FLEET DEPLOYED

TSHD ORANJE	TSHD PRINS-DER-NEDERLANDS	TSHD QUEEN OF THE NETHERLANDS
		
HOPPER CAPACITY 15,961 M^3	HOPPER CAPACITY 15,961 M^3	HOPPER CAPACITY 35,500 M^3

TSHD HAM 318	CSD PHOENIX	BHD BALDUR
		
HOPPER CAPACITY 35,500 M^3	CUTTER OUTPUT 3300 kW	BUCKET CAPACITY 24 M^3

JNPT PHASE I DREDGING - CHALLENGES

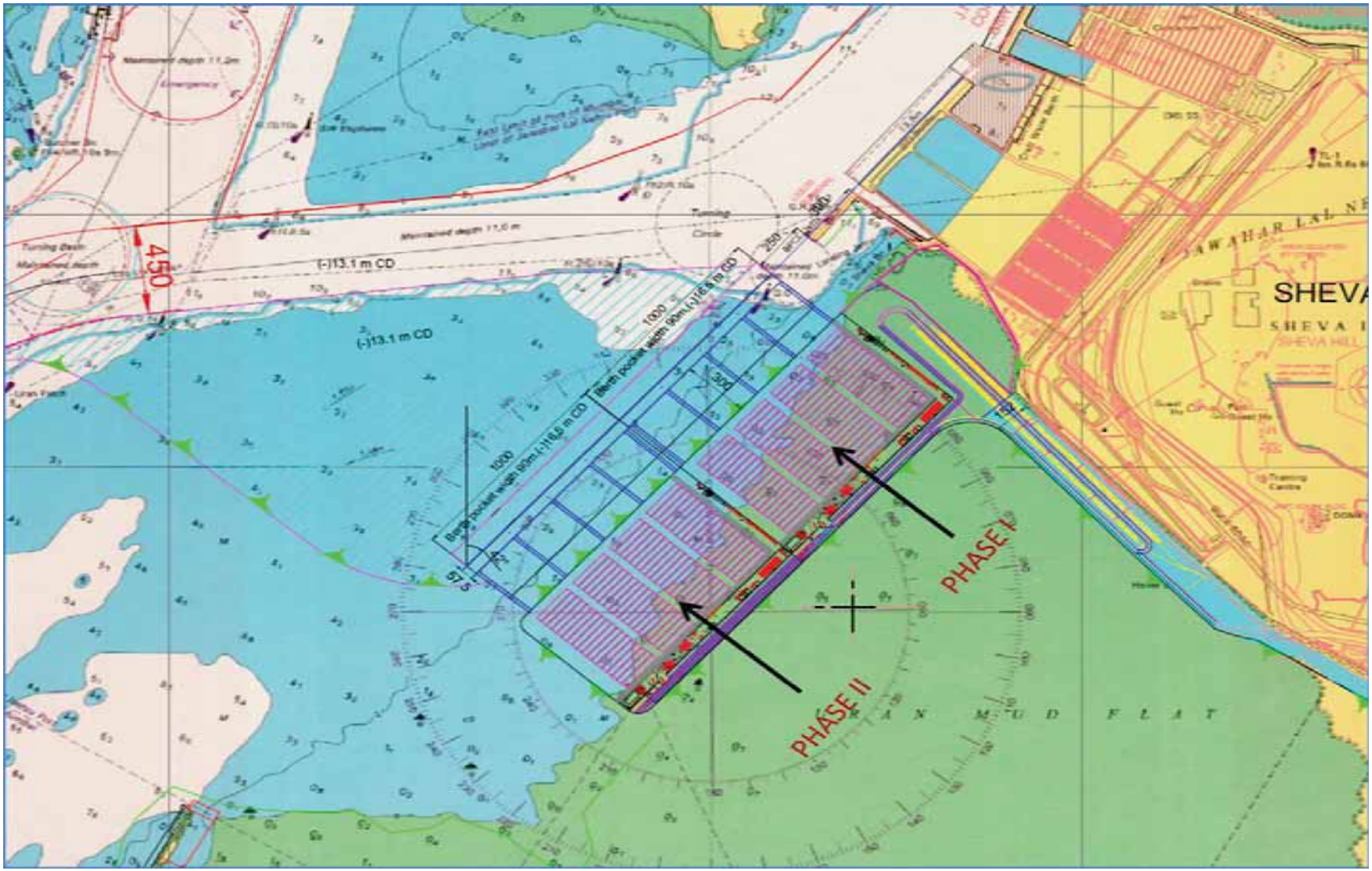
JNPT PHASE I DREDGING - CHALLENGES

JNPT PHASE I DREDGING - CHALLENGES

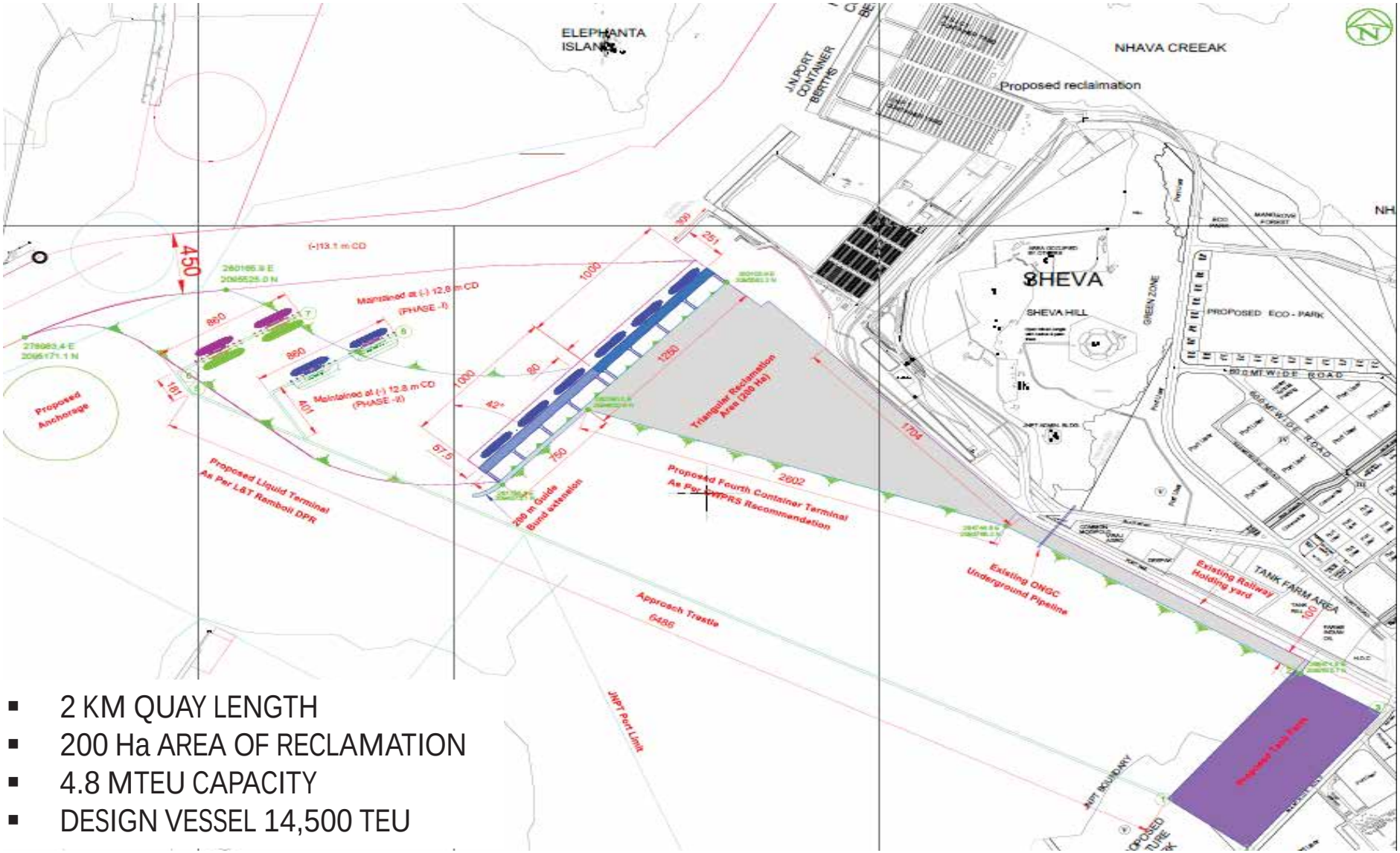
JNPT FOURTH CONTAINER TERMINAL

LAYOUT RECOMMENDED BY TCE

TOTAL AREA OF RECLAMATION: 207 Ha



Final Layout: Total Area of Reclamation: 200 Ha

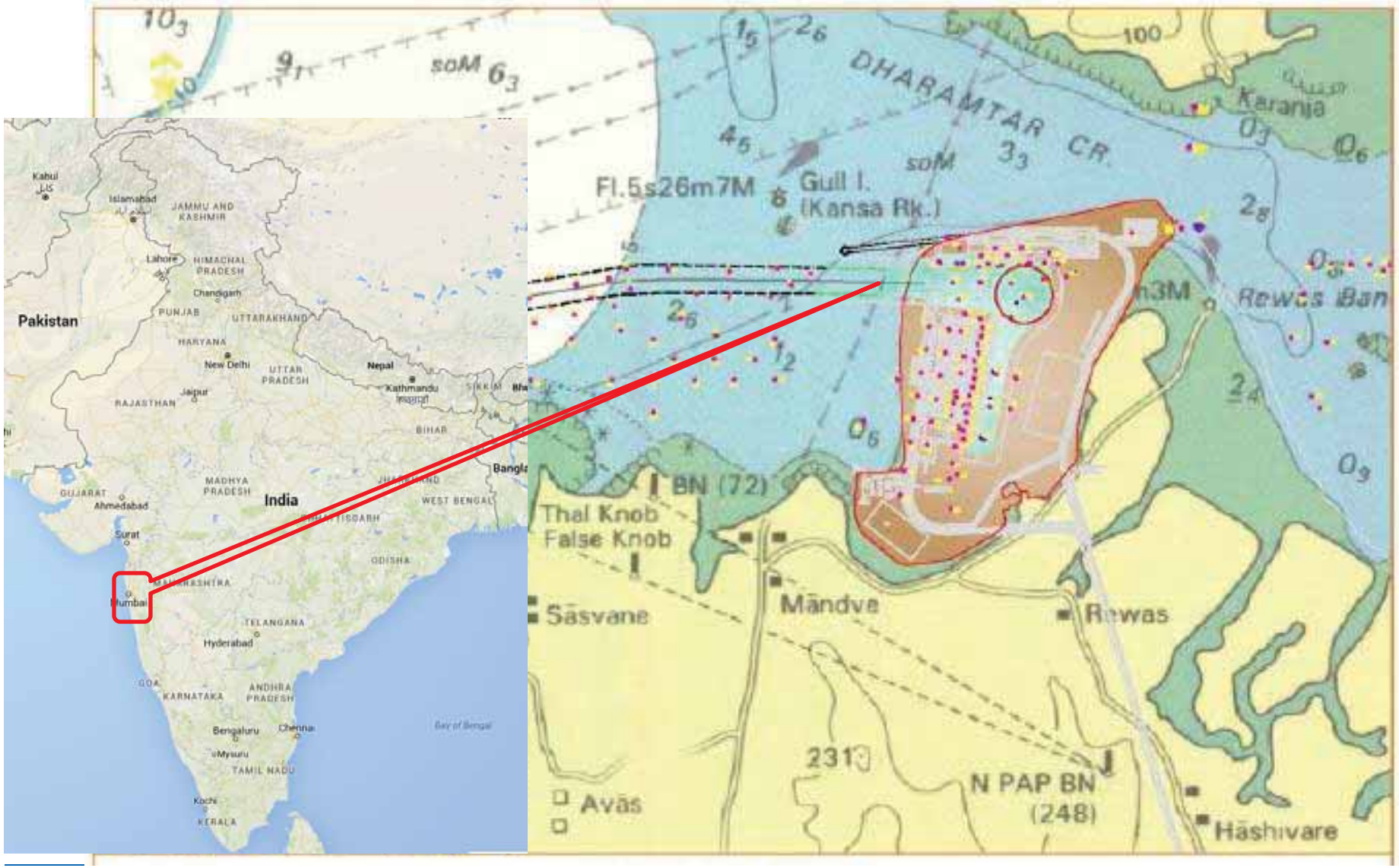


- 2 KM QUAY LENGTH
- 200 Ha AREA OF RECLAMATION
- 4.8 MTEU CAPACITY
- DESIGN VESSEL 14,500 TEU

Ongoing Reclamation Works at JNPT

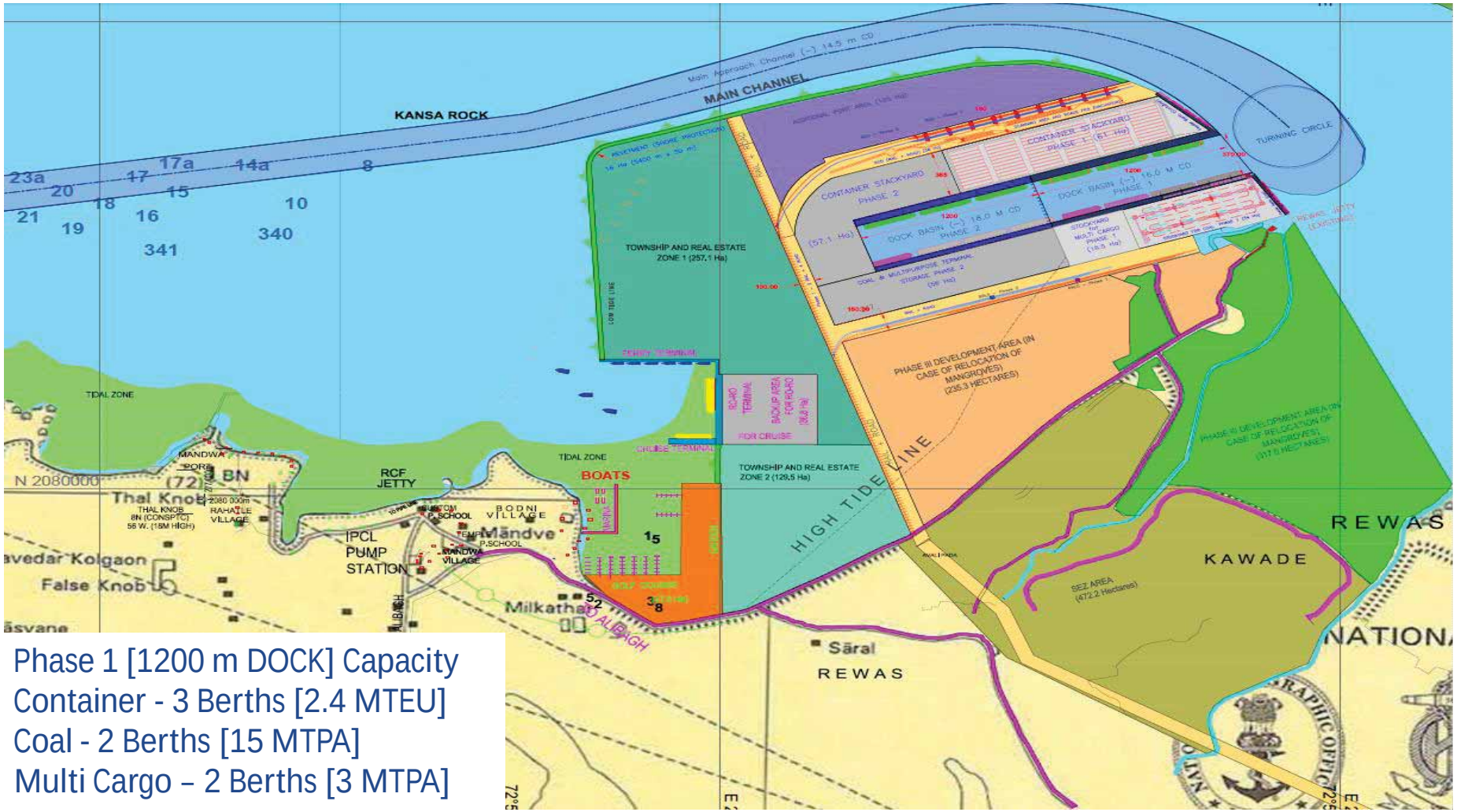
DEVELOPMENT OF DEEP WATER ALL WEATHER PORT AT REWAS

Earlier Layout



DEVELOPMENT OF DEEP WATER ALL WEATHER PORT AT REWAS

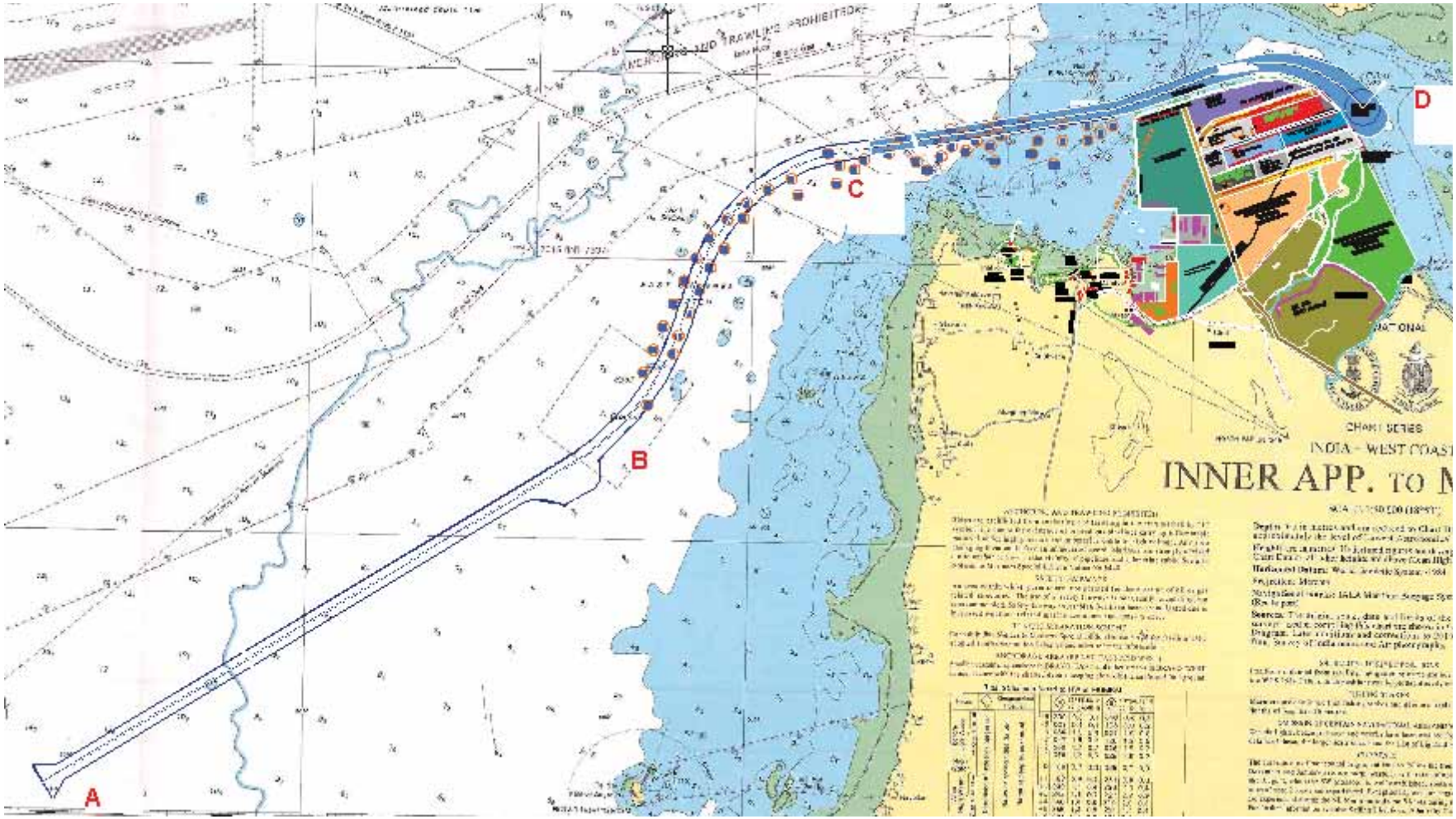
Change in Layout by TCE



Phase 1 [1200 m DOCK] Capacity
Container - 3 Berths [2.4 MTEU]
Coal - 2 Berths [15 MTPA]
Multi Cargo – 2 Berths [3 MTPA]

DEVELOPMENT OF DEEP WATER ALL WEATHER PORT AT REWAS

- The length of the approach channel has been estimated to be 33.4 km long
- Independent channel avoiding the Mumbai High to Karanja oil and gas pipelines of ONGC



BARGE UNLOADING FACILITY AT FARAKKA – INLAND WATERWAYS

BARGE UNLOADING FACILITY AT FARAKKA – INLAND WATERWAYS

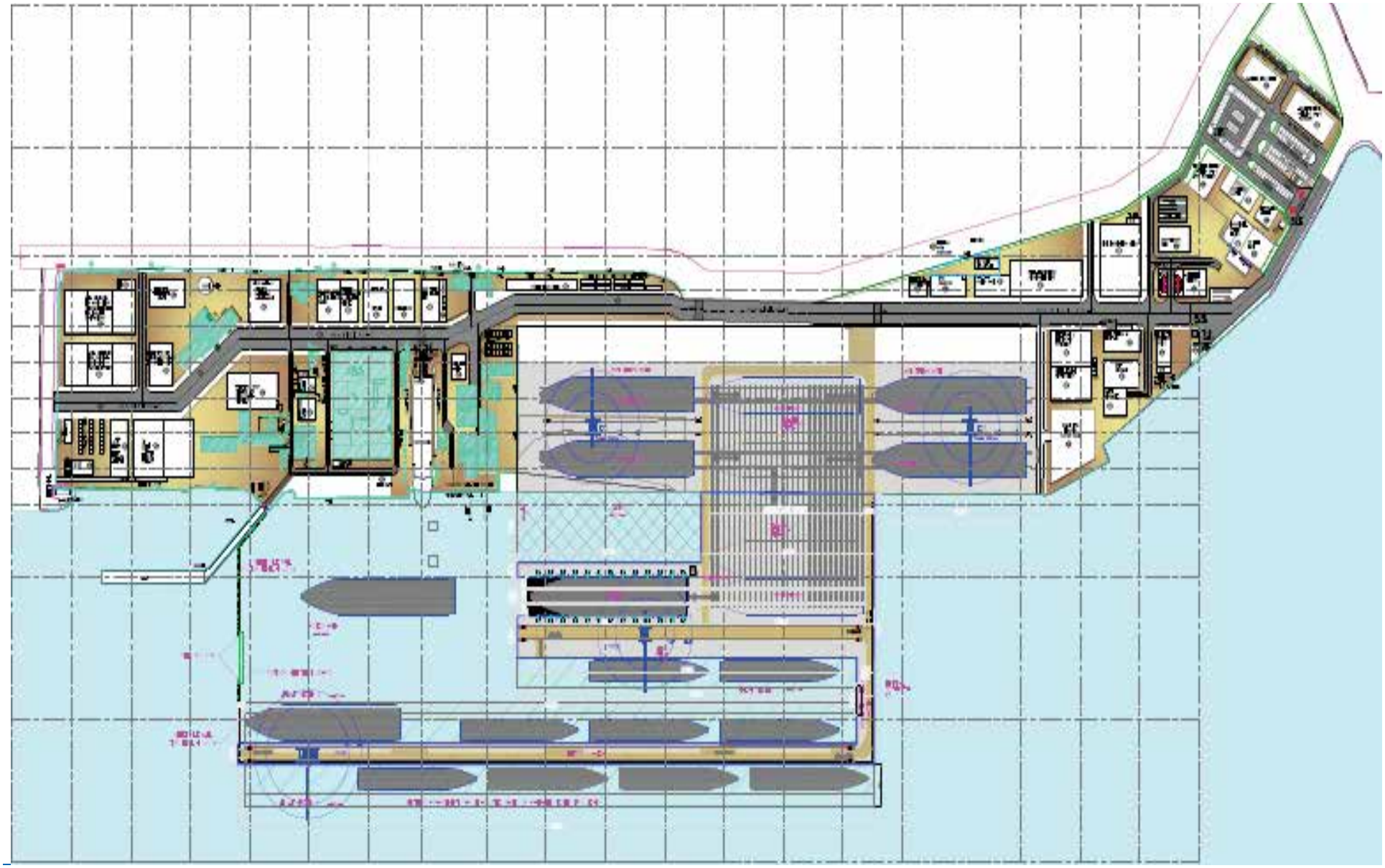
1 BREASTING PLATFORM WITH SHORE CRANE

2 MOORING PLATFORMS

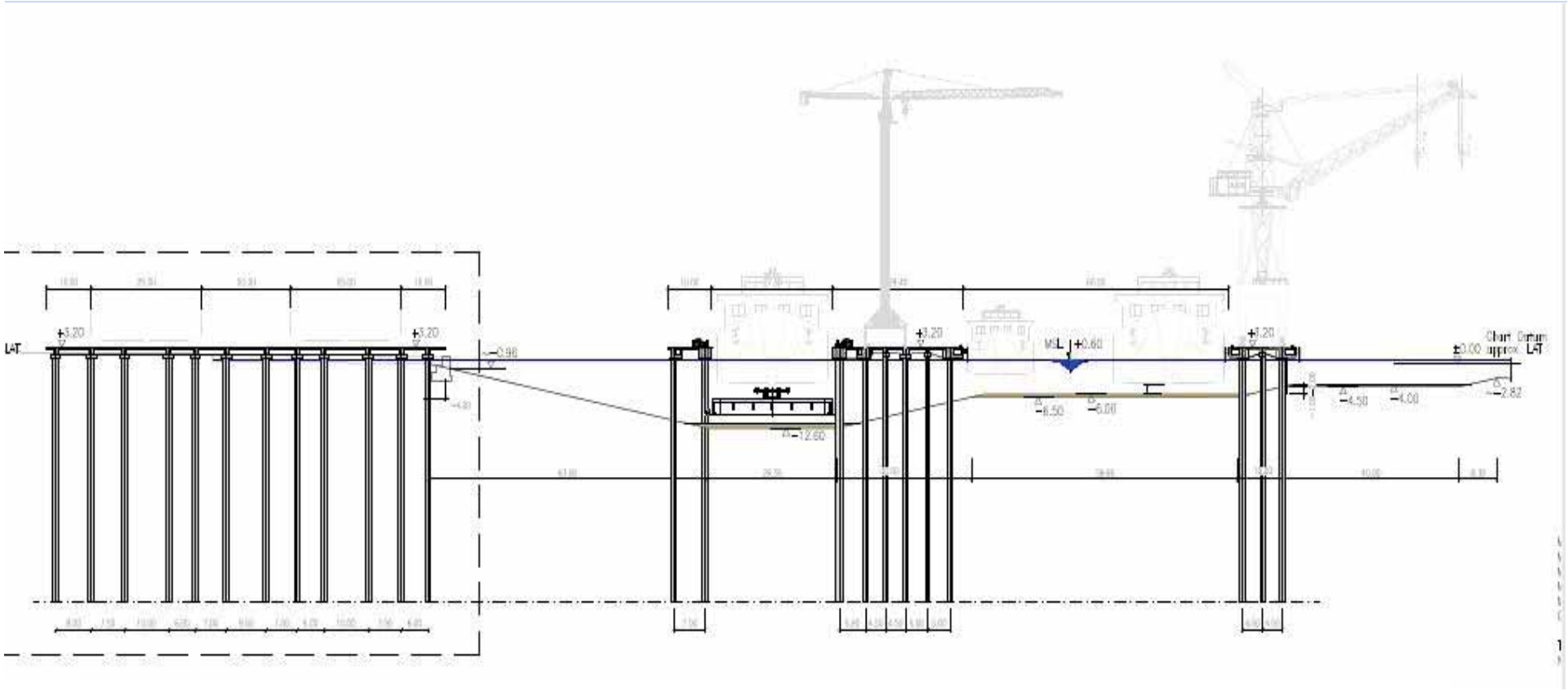
3 JETTY COST REDUCED BY 75% BY BRINGING IN CONCEPT OF BERTHING / MOORING DOLPHINS IN BULK CARGO HANDLING

SALIENT FEATURES	
CAPACITY	3 MTPA
JETTIES	2 NOS
SHORE CRANES	2 NOS
CONVEYOR SYSTEM	1.5 KM
EQUIVALENT TRUCK MOVES	200,000 / YR

INTERNATIONAL SHIP REPAIR FACILITY AT COCHIN SHIPYARD



INTERNATIONAL SHIP REPAIR FACILITY AT COCHIN SHIPYARD



The proposed facility envisages the construction of:

- A ship lift for vessels (130 m LOA x 25 m BEAM)
- A transfer system
- 06 works stations (04 dedicated workstations and 02 workstations within the transfer area)
- 08 afloat berths (depending on availability and size of vessels for repair)
- upgrading of existing work shops
- Baffle Wall with pontoon gates proposed to reduce siltation

THANK YOU