



PUSAT KECEMERLANGAN KEJURUTERAAN & TEKNOLOGI  
JABATAN KERJA RAYA

## PROGRAM LATIHAN JABATAN KERJA RAYA MALAYSIA TAHUN 2021

### PROGRAM: KOMPETENSI MARITIM KURSUS DREDGING & RECLAMATION

Tarikh : 14 – 15 Julai 2021

Tempat : Webex / Google Meet



[www.drnik.com.my](http://www.drnik.com.my)



# CASE STUDY

Deepening of Navigation Channel  
for Port of Tanjung Pelepas, Johor

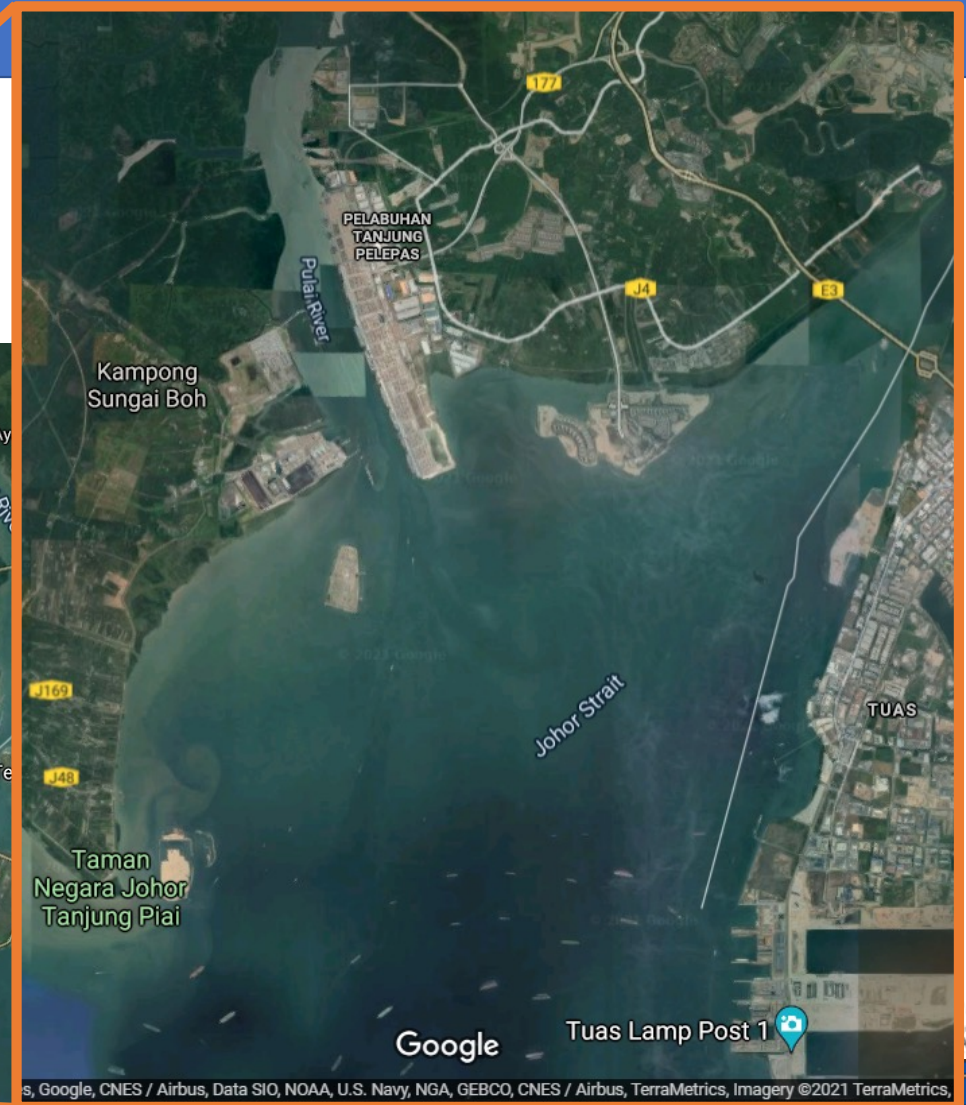
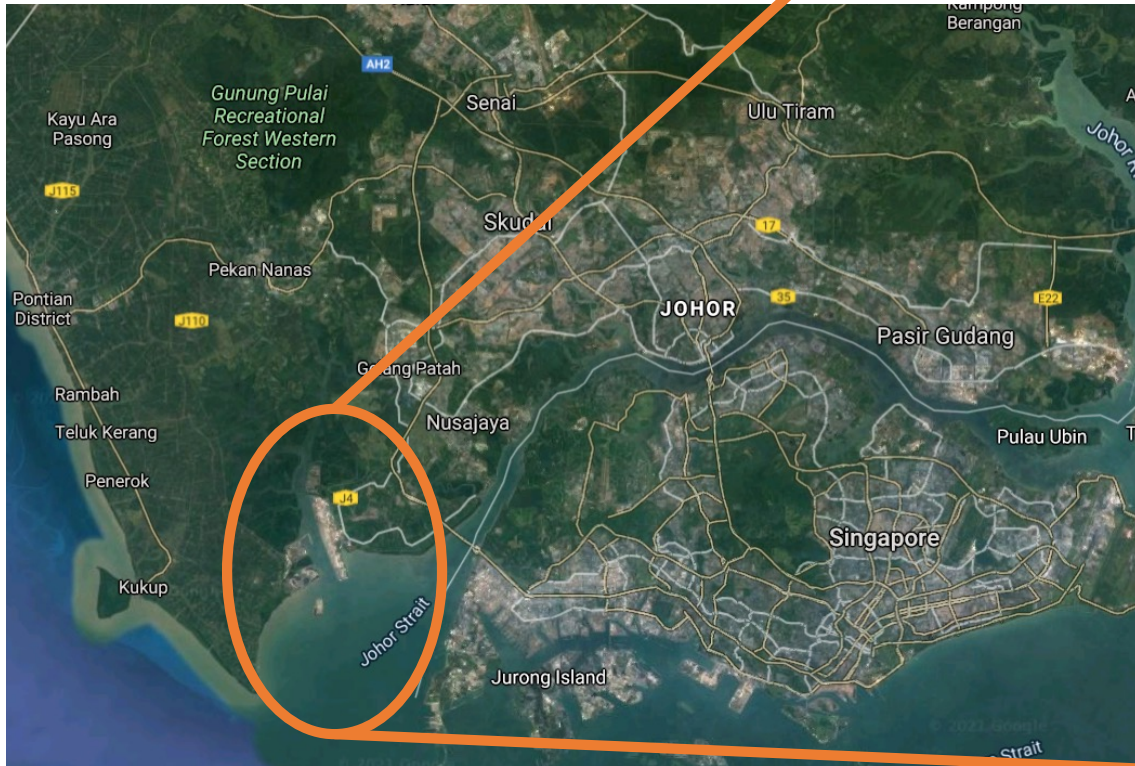
PROGRAM LATIHAN JKR 2021



**Ahmad Azimi Kamaluddin**  
Senior Engineer  
Marine, Coastal & Hydraulic

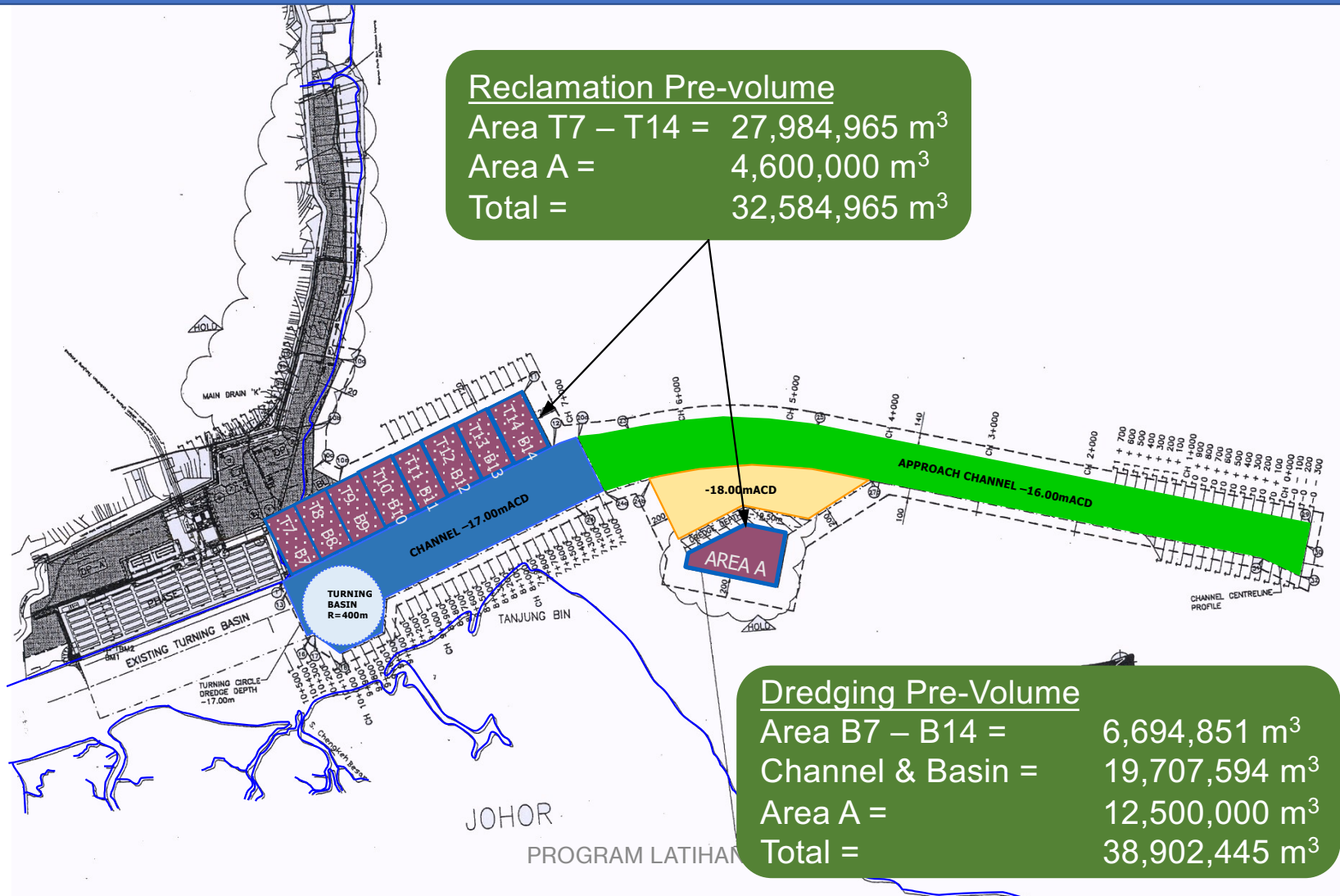


# Project Location



# Continuous Development

Back in  
2002/03



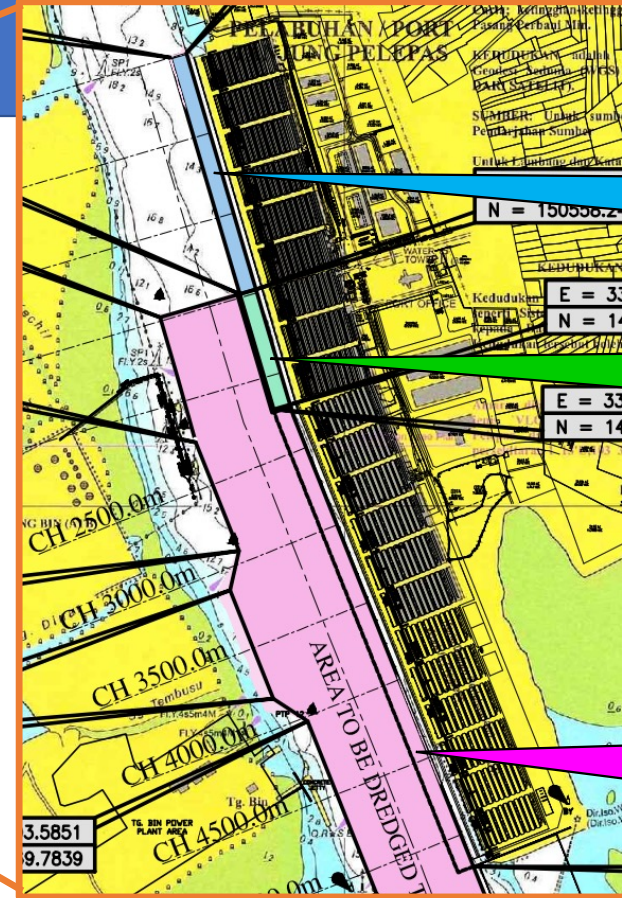
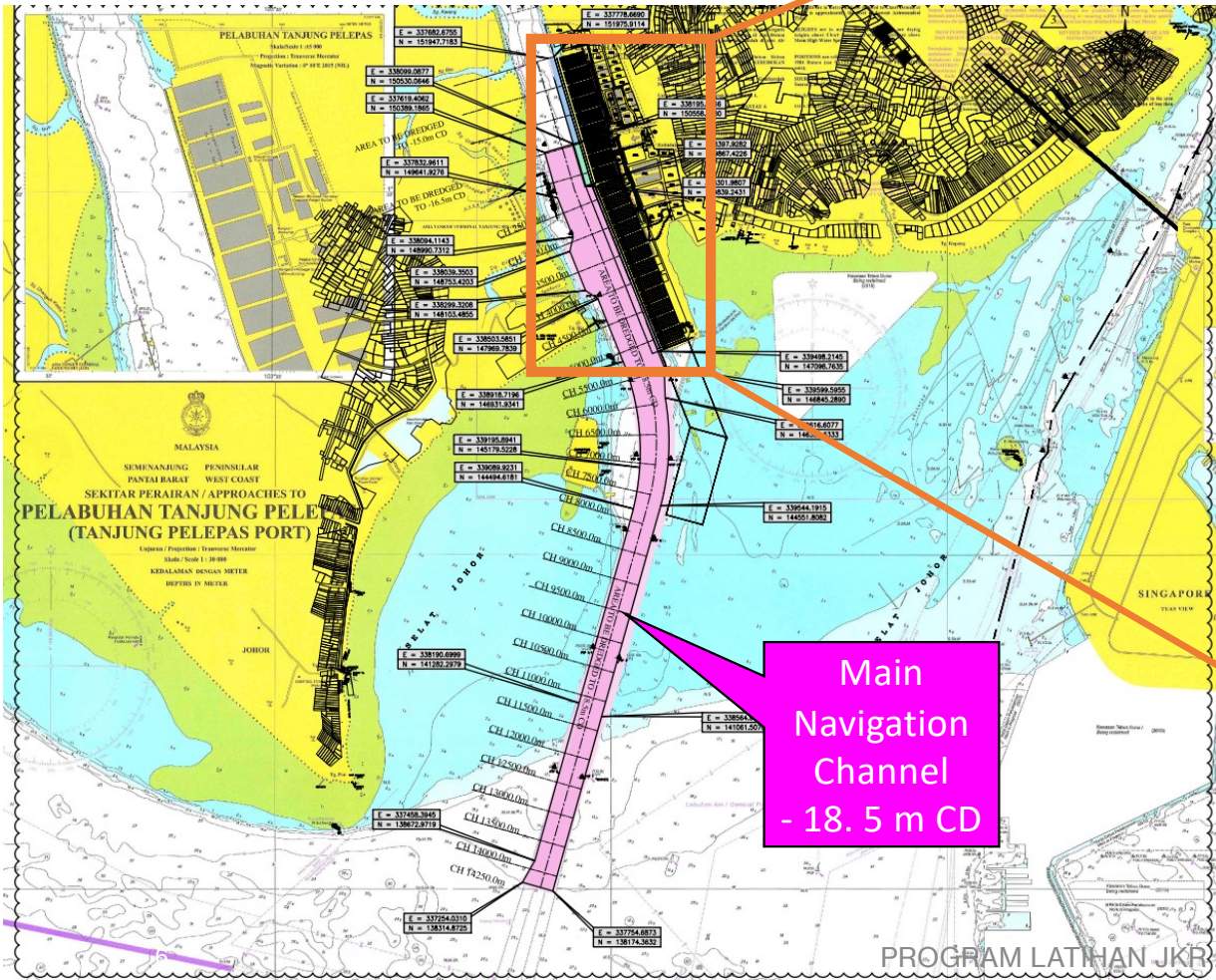
# Continuous Development

## Back in 2002/03 – Wharf Expansion



# Project Layout & Design

2017/2020



Berth 1 - 4  
- 15 m CD

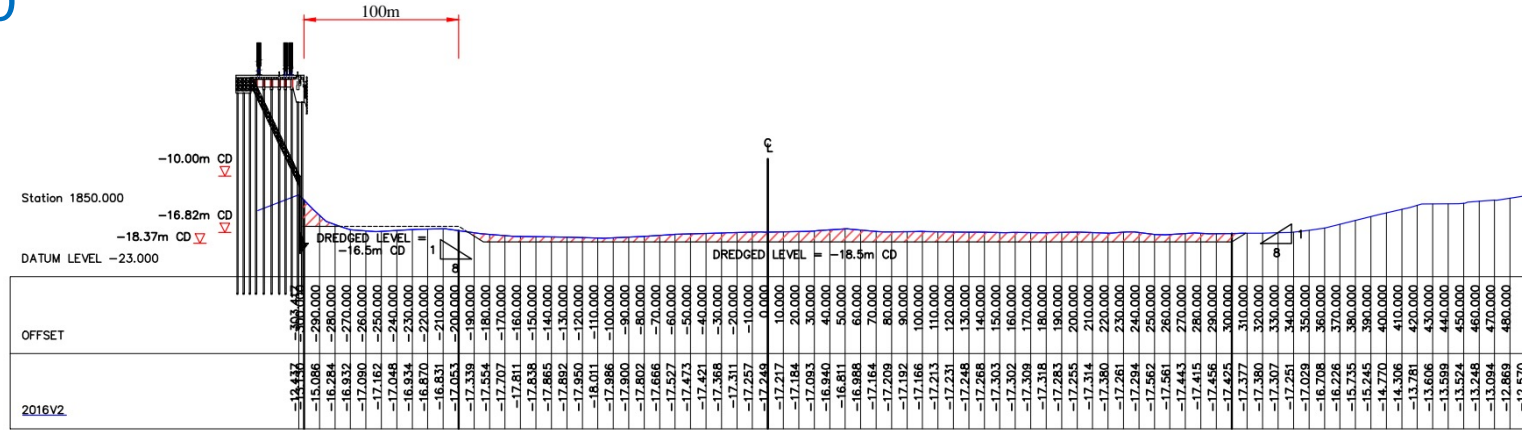
Berth 5 - 6  
- 16.5 m CD

Berth 7 - 14  
- 18.5 m CD

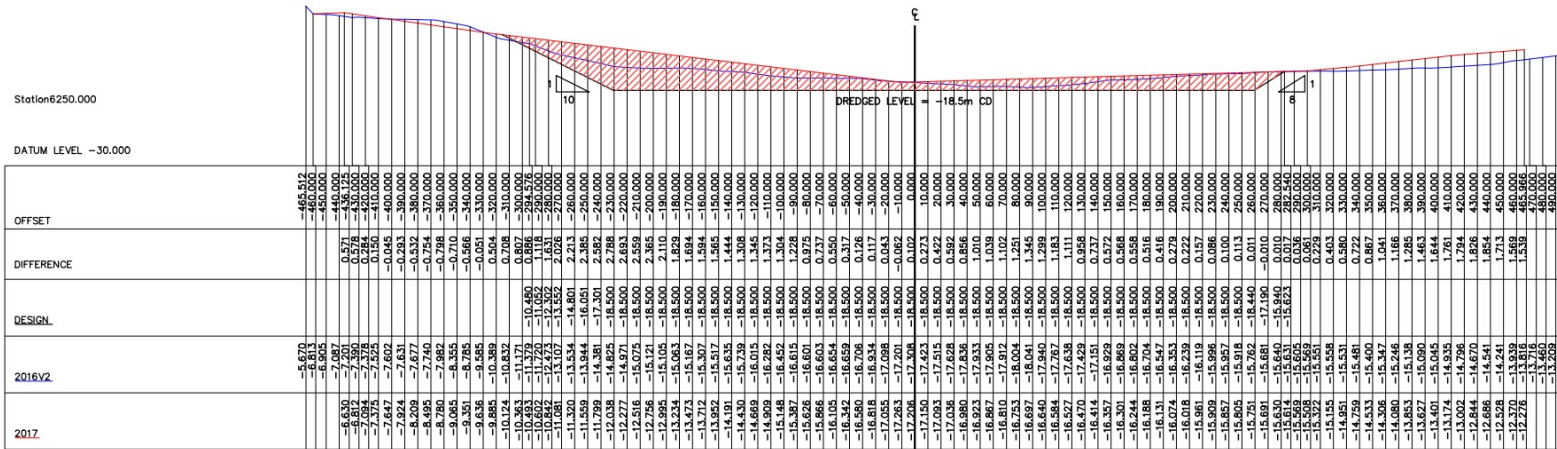
Main  
Navigation  
Channel  
- 18.5 m CD

# Project Layout & Design

2017/2020



Station 1850.0m

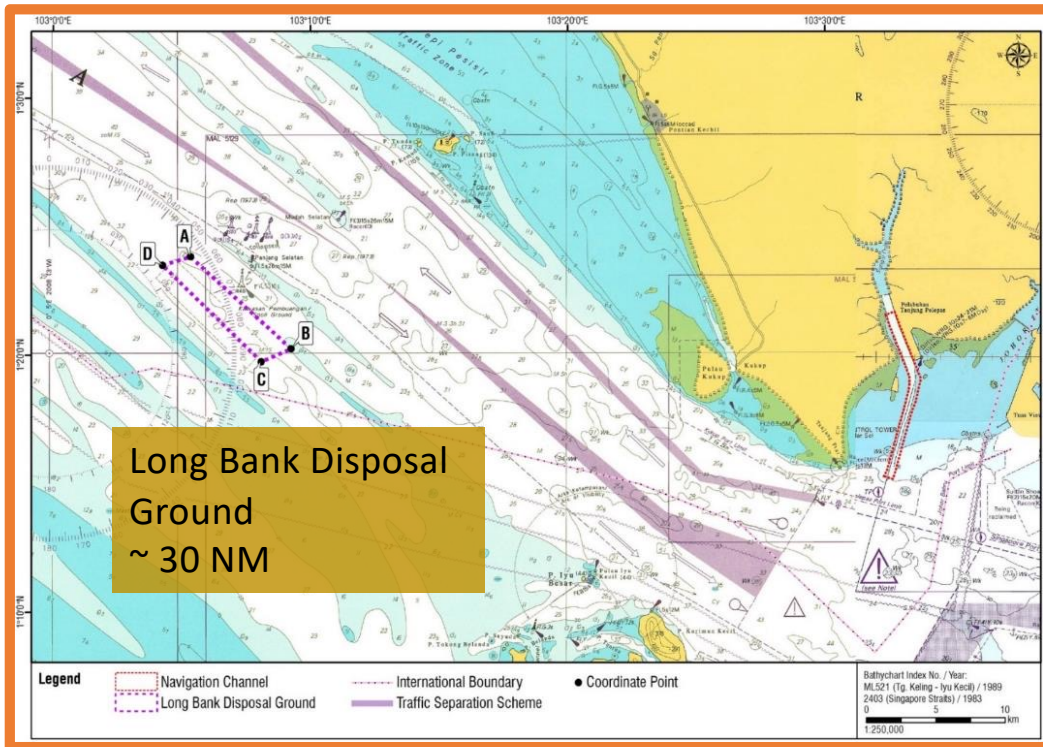


Station 6250.0m

Hor scale A1=1:2000, A3=1:4000  
Ver scale A1=1:10000, A3=1:20000

# Project Layout & Design

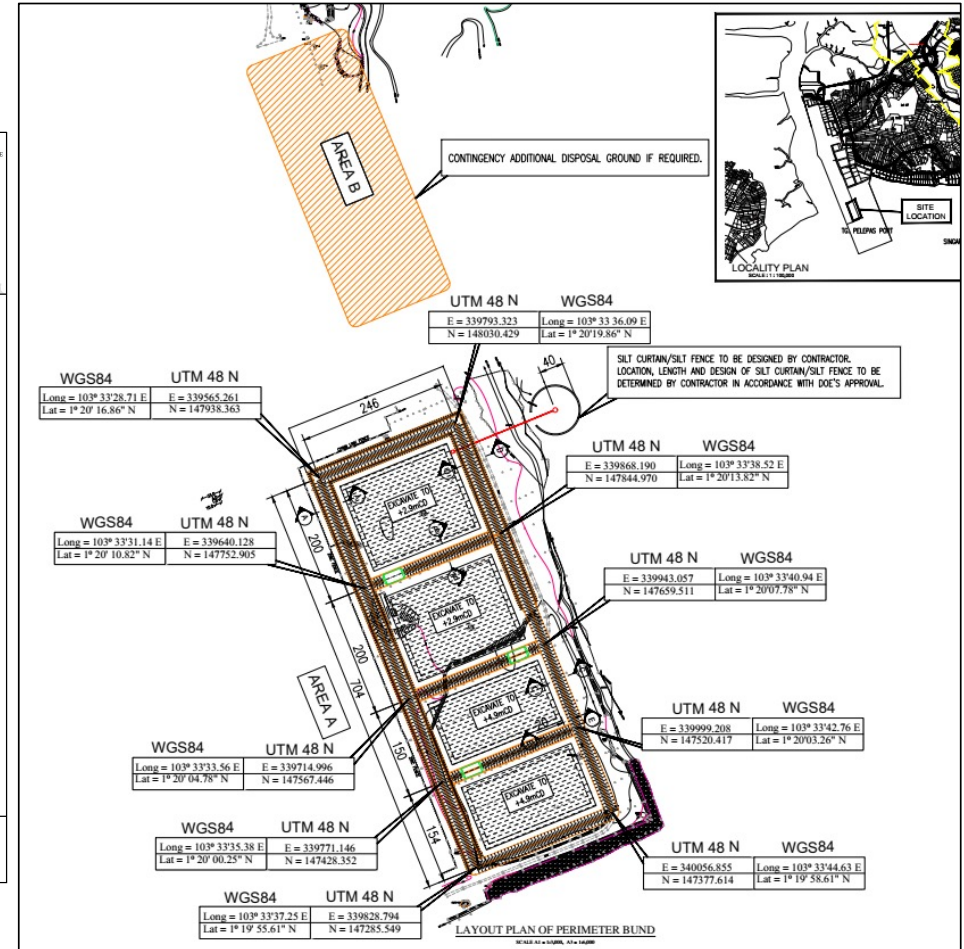
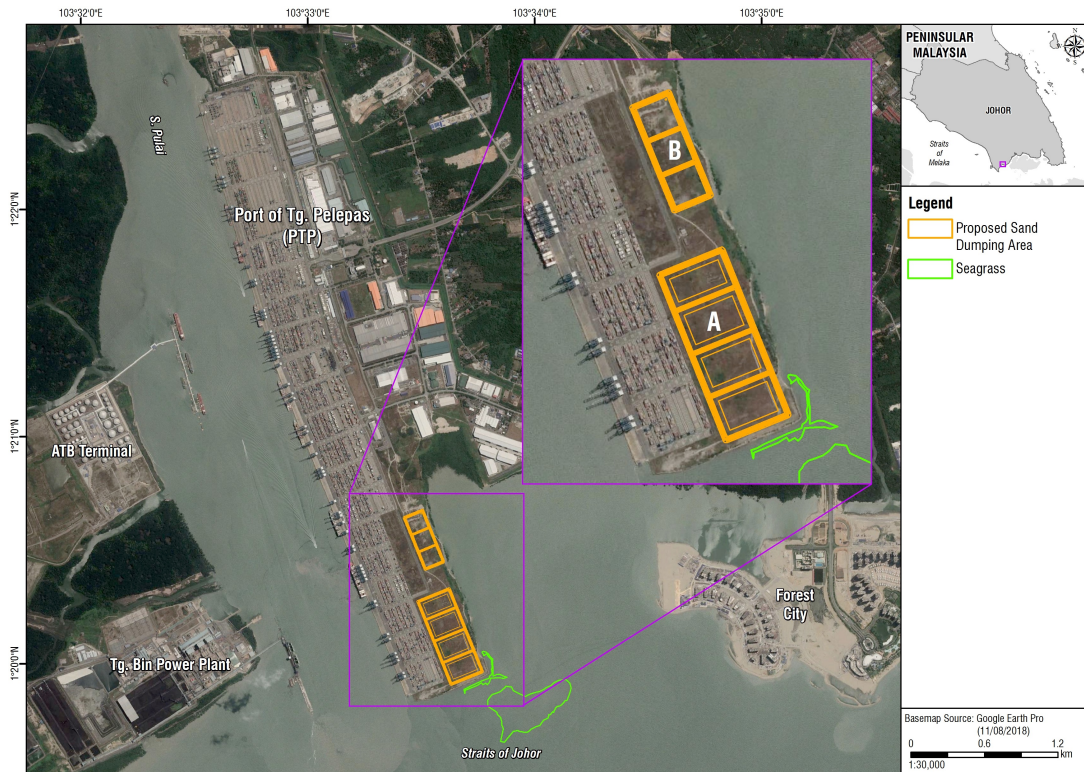
2017/2020





# Project Layout & Design

2017/2020



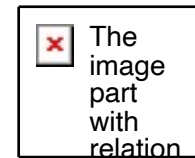
# Project Components

1. Dredging of navigation channel
  - 6.9 Million m<sup>3</sup>
  - 14.25 KM long
  - Design depth -15 m CD to -18.5 m CD
2. Disposal at:
  - Long Bank disposal ground
  - On-land containment bund
3. Construction of on-land containment bund
4. Environmental monitoring and management

**Client:** Pelabuhan Tanjung Pelepas Sdn Bhd

**Engineer:** Dr. Nik & Associates Sdn. Bhd.

**Main Contractor:** Dredging International Sdn. Bhd.



# Construction Plants



Inai Kenanga  
Jumbo TSHD  
33,000 m<sup>3</sup>



HAM 318  
Jumbo TSHD  
36,000 m<sup>3</sup>

## Main Channel and Side Slopes

- Distance ~ 30 NM
- Volume
- Material



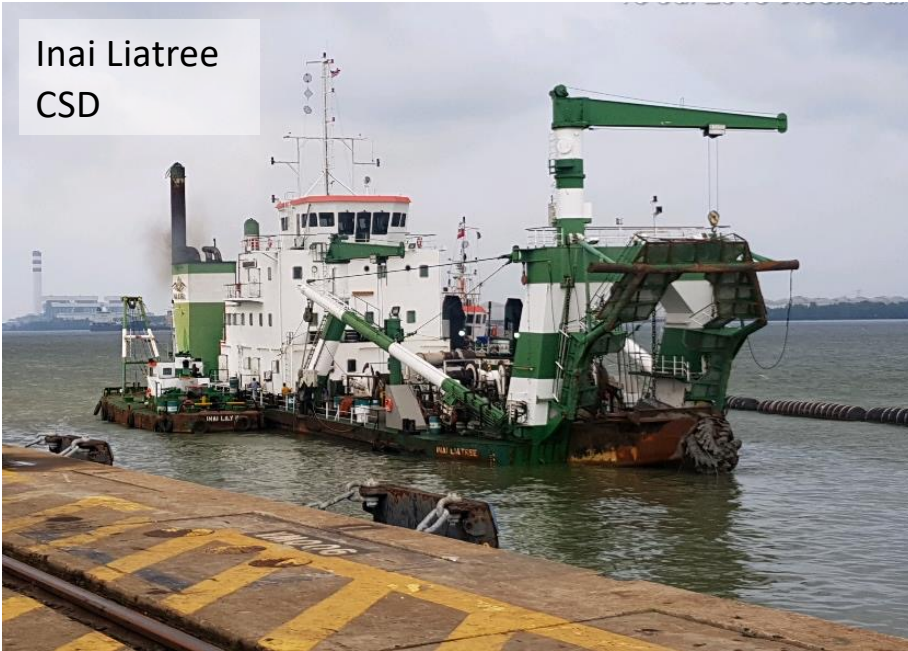
Inai Tecoma  
TSHD 3,600 m<sup>3</sup>



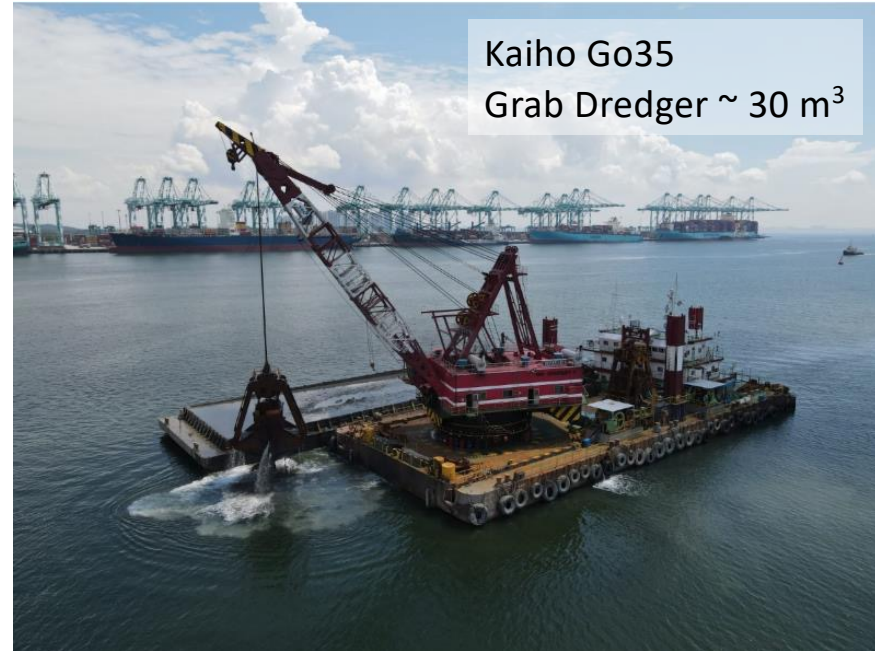
Nile River  
TSHD 17,000 m<sup>3</sup>

# Construction Plants

Inai Liatree  
CSD



Kaiho Go35  
Grab Dredger ~ 30 m<sup>3</sup>



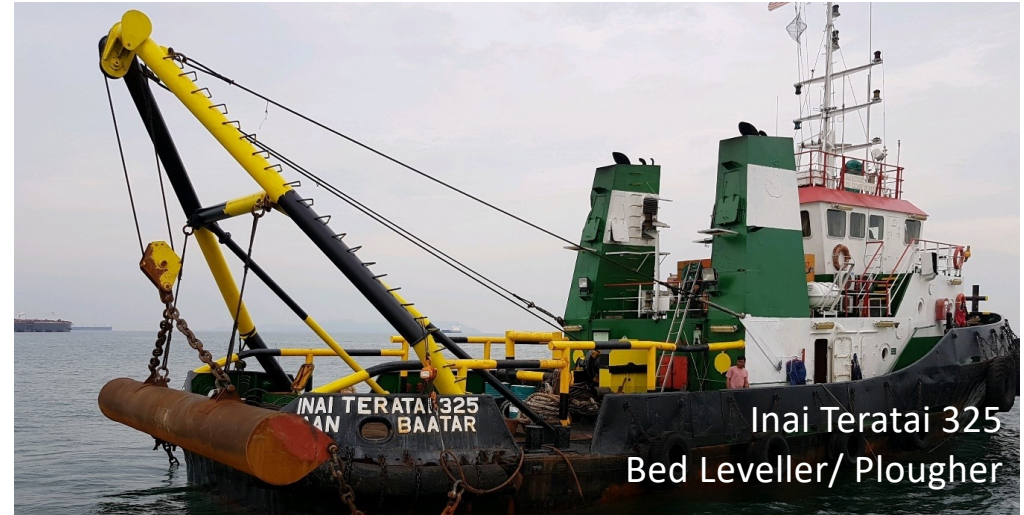
## Berth Pockets

- Volume
- Material
- Traffic

# Construction Plants



ASL Mercury  
Bed Leveller/ Plougher



Inai Teratai 325  
Bed Leveller/ Plougher



Stiff clay ploughed

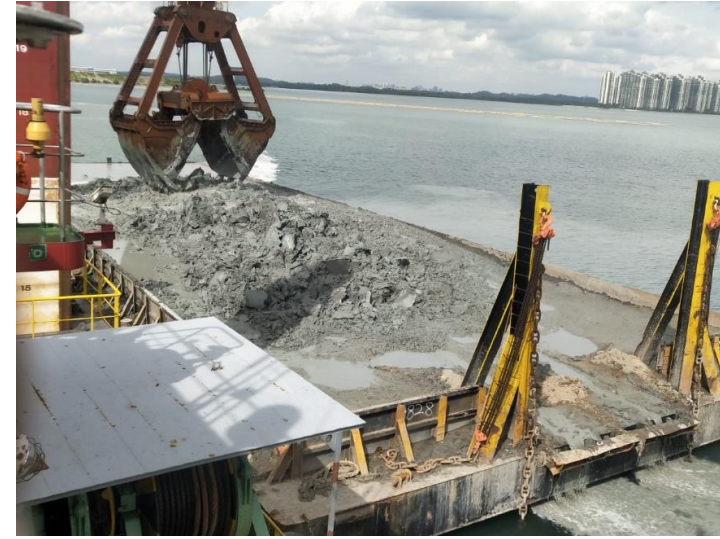
## Whole Navigation Channel

- High spots
- Mobility
- Working boat/ Tug boat

# WORKING – Dredging with TSHD



# WORKING – Dredging with Grab Dredger



Grab dredger loading flat top barge



Flat-top barge maneuvered and tugged by tugboat and multicat

# WORKING – Dredging with Grab Dredger



At temporary jetty, barge is unloaded.  
Excavator load dredge material into articulated dump truck



Dump truck tips dredge material into the bund

PROGRAM LATIHAN JKR 2021



# WORKING – Filling with Dredged Material



# Environmental Discharge Outlet System



# Environmental



Silt Curtain enclosing Discharge Outlet System



# Environmental Seagrass Monitoring



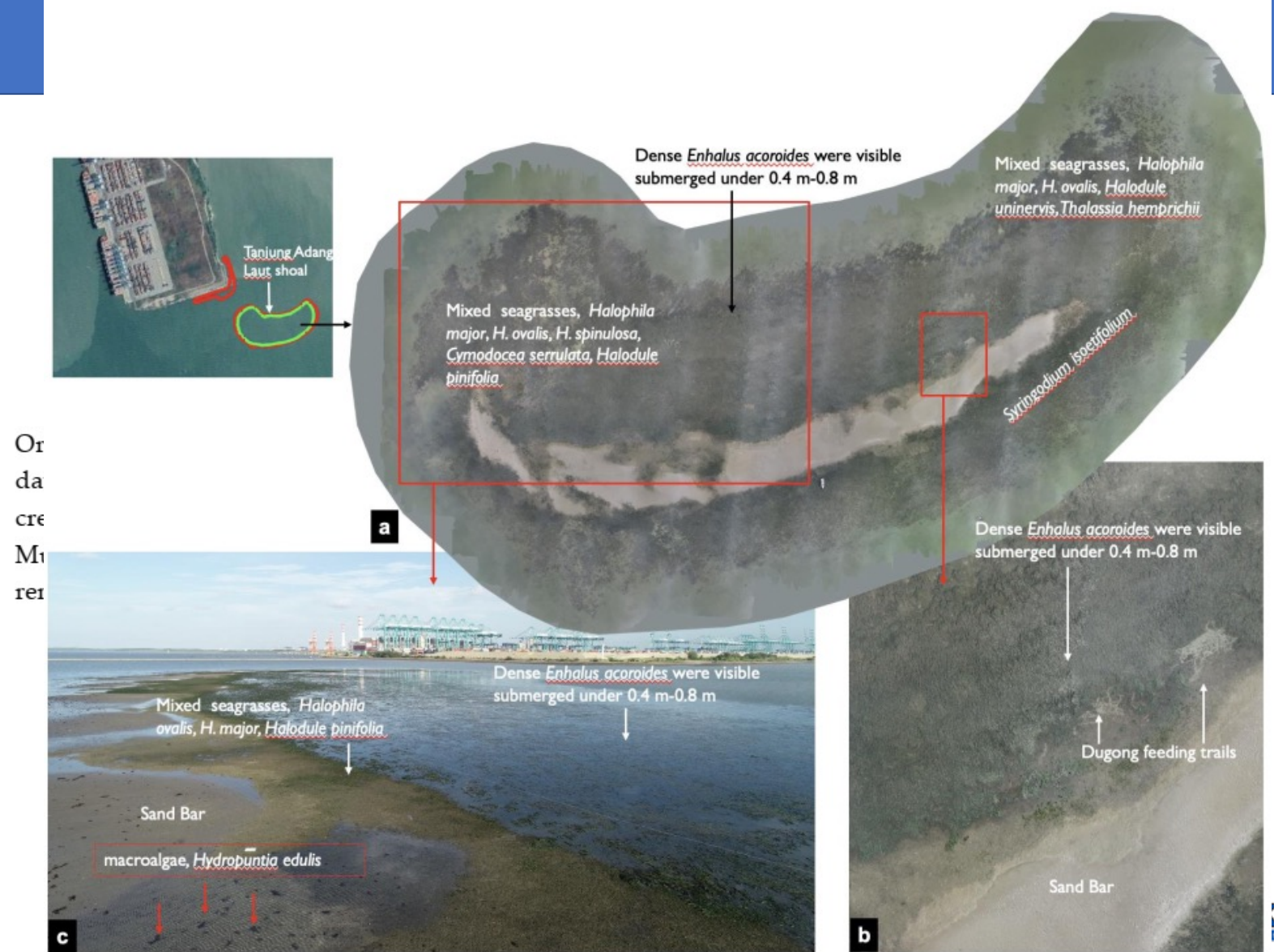
Tanjung Adang Laut Seagrass Meadow

Source: Japar Sidik B. & Muta Harah Z., UPM



LATIHAN JKR 2021

# Environmental Seagrass Monitoring



Or  
da  
cre  
M  
rer

# Environmental DDMS Monitoring

Tresco Fleet PTP Project Client

Vessel overview

Range: Period Refresh

Show latest position when no positions in period

From: 18/09/2020 00:00

Till: 18/09/2020 23:30

Plan Monitor

S	SP	Vessel	C	Z
		Nile River		

Nile River  
SOG 0.0 kts  
COG 267.01  
DRS Sailing Empty

Tresco Fleet PTP Project Client

Vessel overview

Range: Period Refresh

Show latest position when no positions in period

From: 14/09/2020 00:00

Till: 14/09/2020 23:30

Plan Monitor

S	SP	Vessel	C	Z
		Nile River		

Nile River  
SOG 10.13 kts  
COG 13.07  
DRS Sailing Empty

Vessel Nile River

14/09/2020

Positions

Timelines

Events

Legend

Unknown	Sailing Empty	Dredging	Sailing Full	Dumping
Discharging	Turning	Uncoupling	Coupling	Recycling
Rainbowing	Load through discharge	Coupling for I t d	Uncoupling for I t d	



**THANK YOU**

**End of Session 5**

**Q&A**