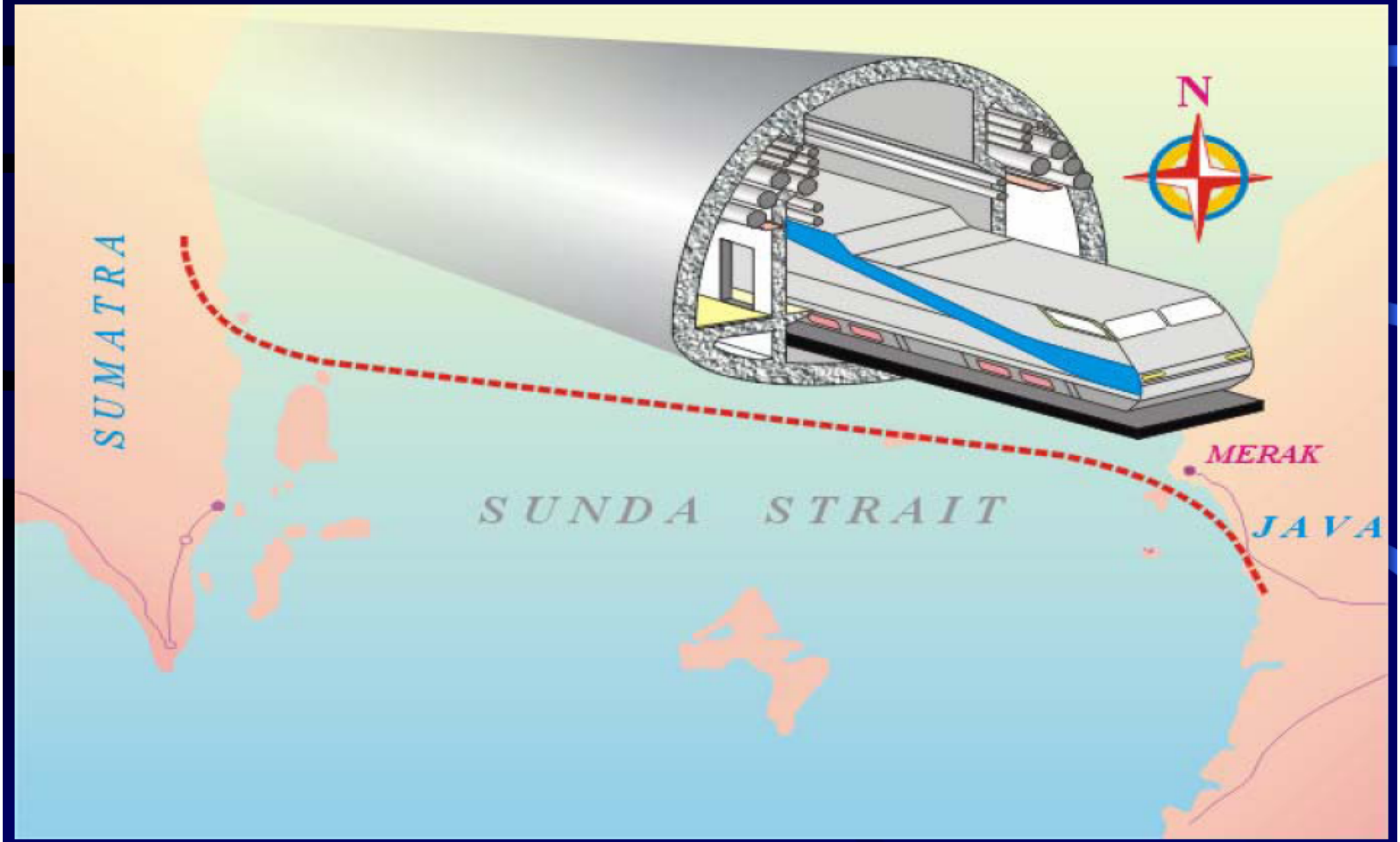
The Nusantara Tunnel™

Linkage System and Integrated Development



PT NUSANTARA TUNNEL INDONESIA (NUSTI)

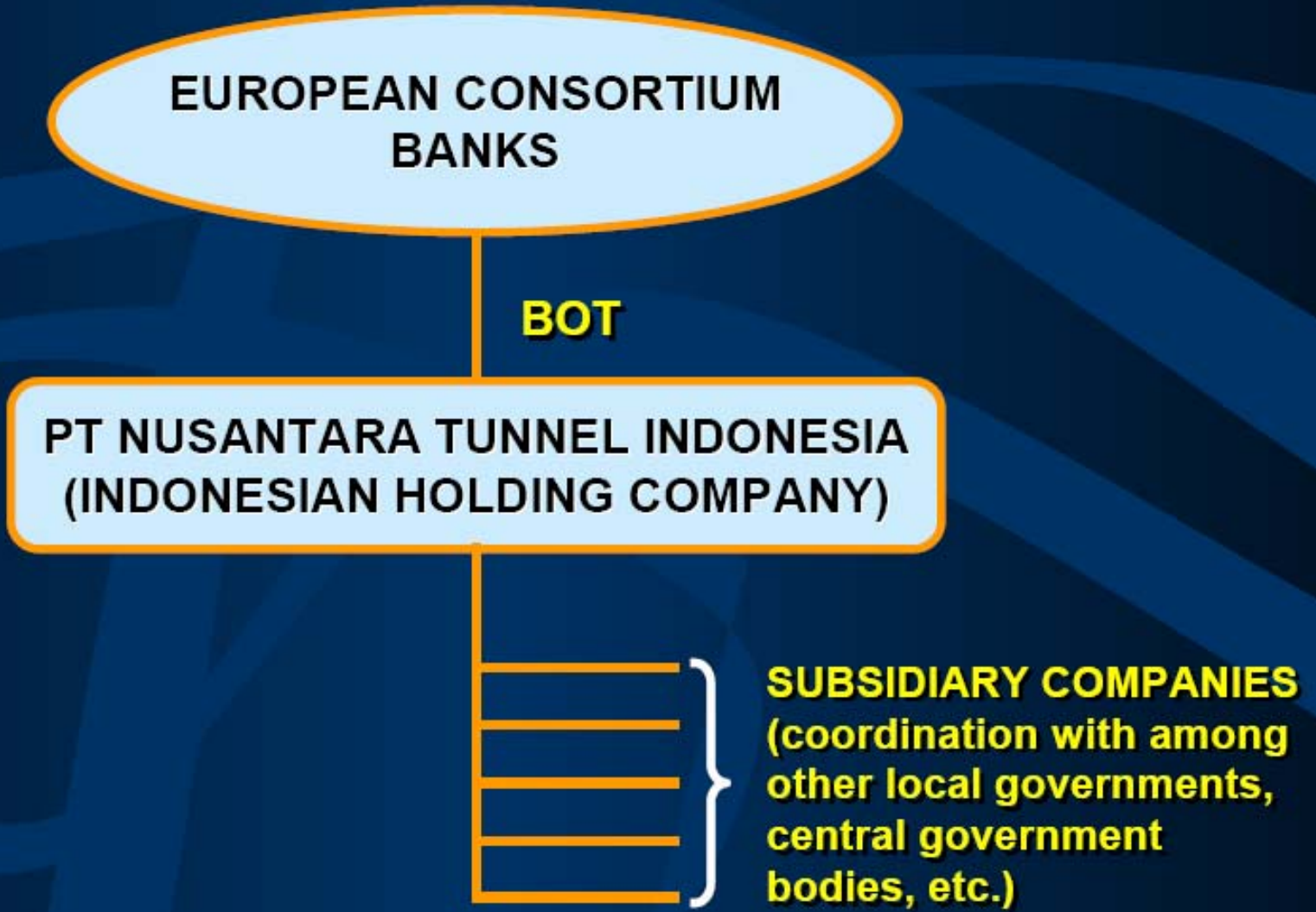
www.nusantaratunnel.co.id

President & CEO:	**Sindur P. Mangkoesoebroto, Ph.D.**
Chief Financial Officer:	**Sarifah M. Sutalaksana (Finance, Bussines Development, Investment)**
Chairman of the Board:	**DR. Felix O. Soebagjo, SH, LLM (Legal Affair, Long-term Strategy)**
Member of the Board:	**DR. Ir. Komang Bagiasna (Director of Technology)**

RAILWAY NETWORK IN JAVA-SUMATERA

BUSINESS PLAN

BUSINESS MODEL: EURO TUNNEL (NO RISK TO GOVERNMENT)



CHALLENGES

Facts about existing transportation system between Java -Sumatera

- Ferry system crossing the Sunda Strait
- Travelling time: min. 2.5 hours over 25 km distance (can take more than 24 hours including waiting time in some cases)
- Subject to weather condition
- Bottle neck; especially in peak season
  (13 million passengers & 2 million cars, 1999)
- Soon will be physically unmanageable
- Need better alternative

ALTERNATIVES of LINKAGE INFRASTRUCTURE

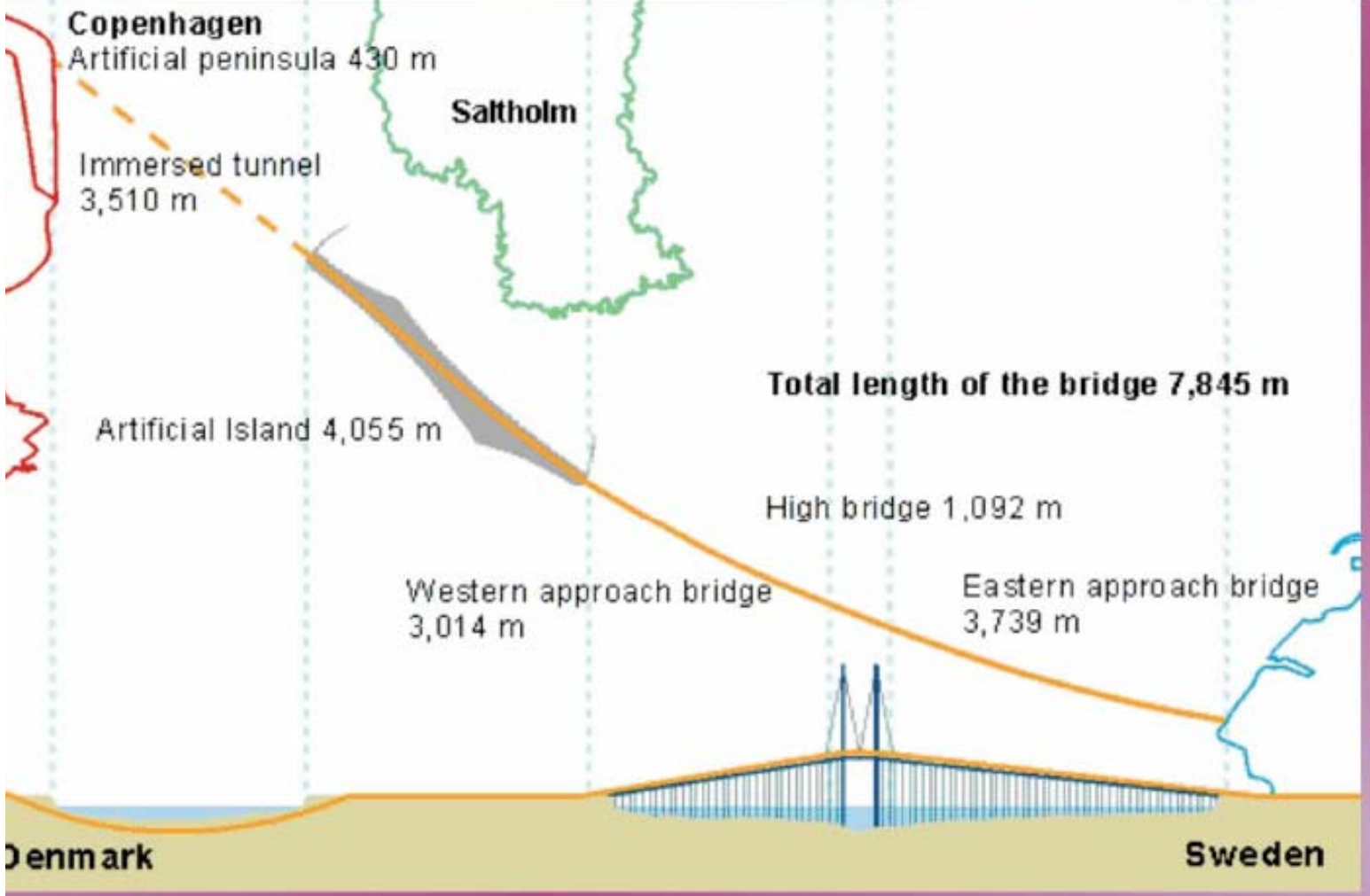
BETWEEN JAVA - SUMATERA

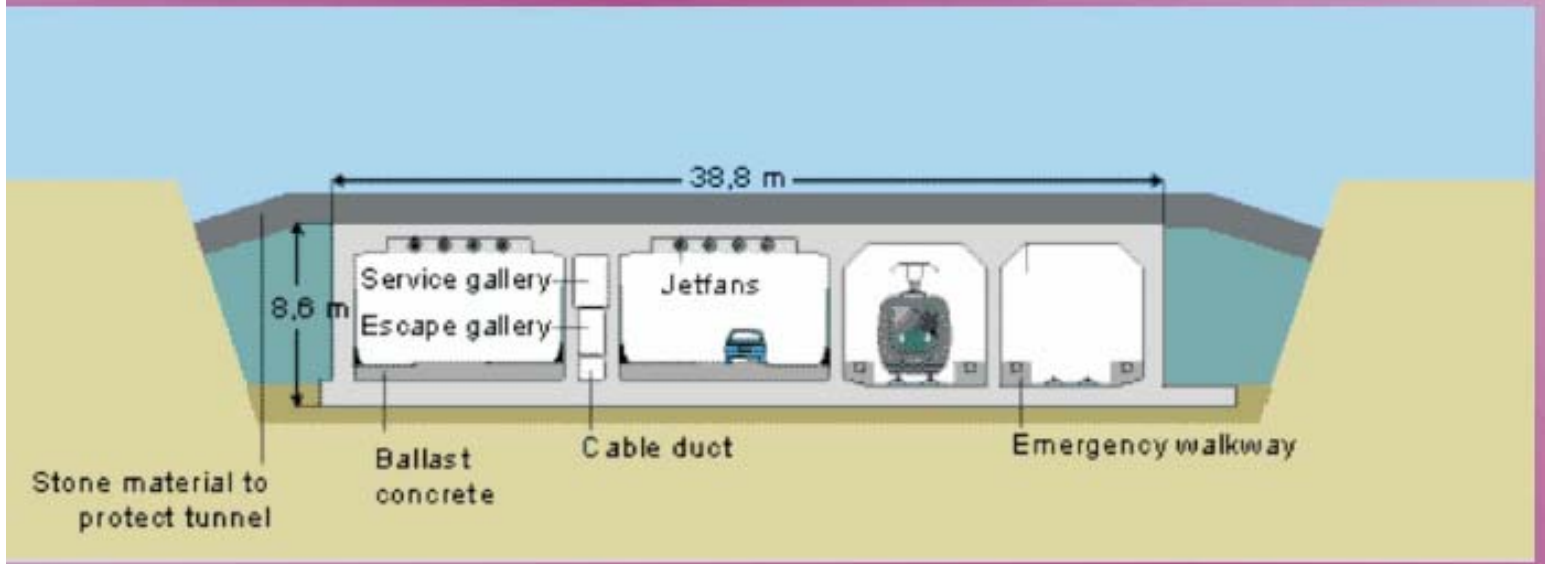
- **Immersed Tunnel**
  (Catenary reinforced concrete pipe)
  investment: US$ 700 million
  ⇒ reliability of this system need be questioned

- **Suspension bridge**
  self-weight to payload ratio: 30
  investment: US$ 7.4 - 24 billion
  ⇒ high capital investment

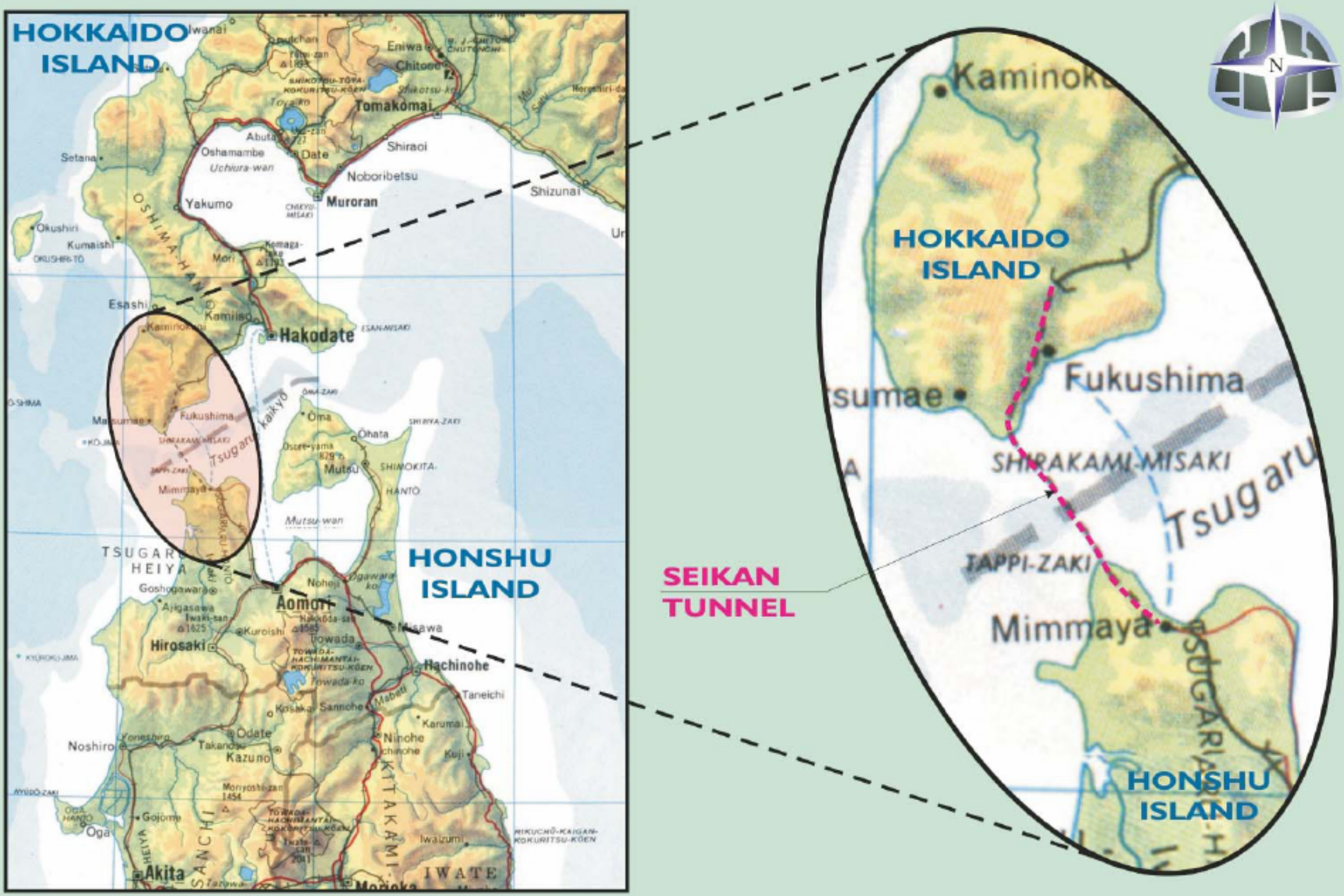
- **Underground tunnel**
  investment: US$ 3 - 4 billion
  ⇒ reliability is field proven: Seikan Tunnel, Dover Strait Tunnel

TECHNICAL/ FINANCIAL PROBLEMS

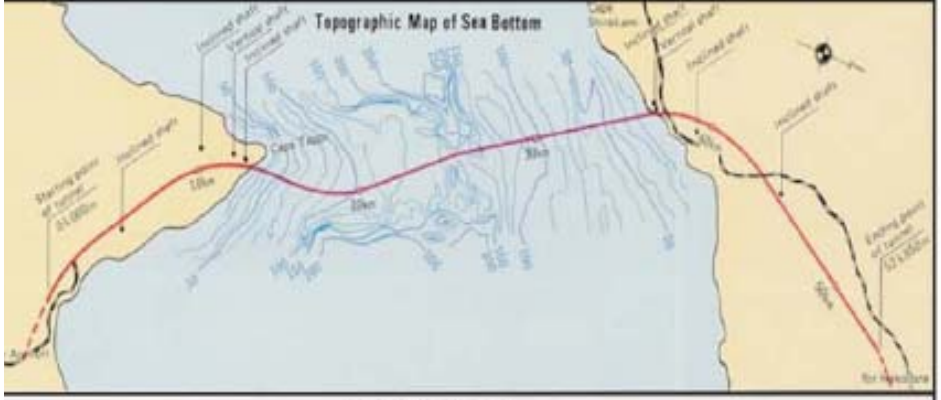


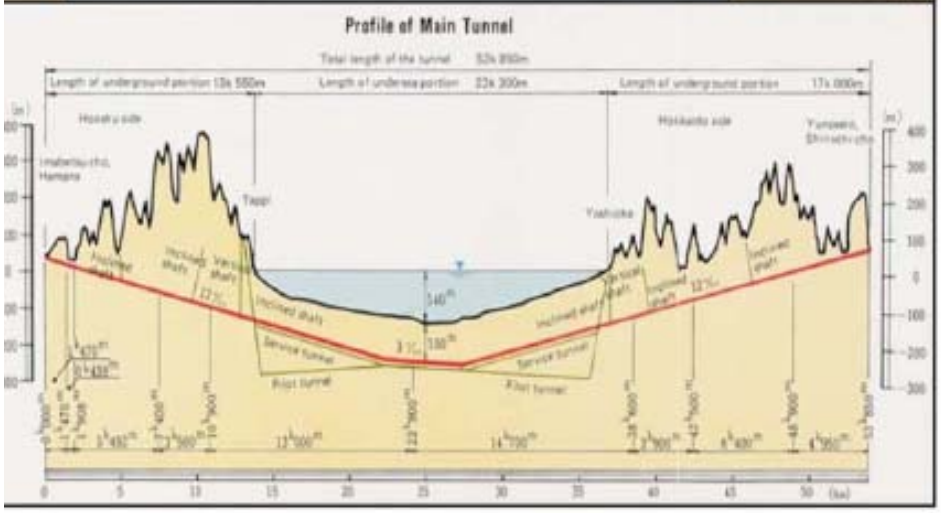


DROGDEN TUNNEL, ORESUND

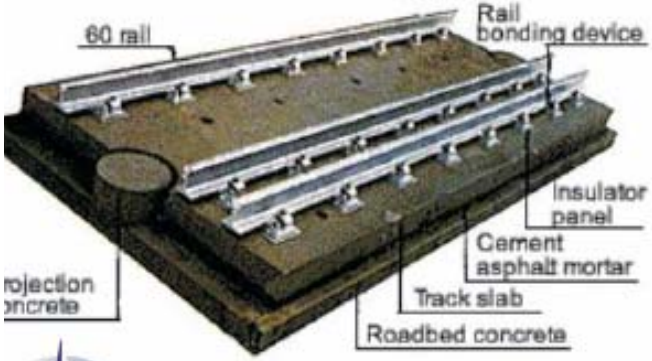


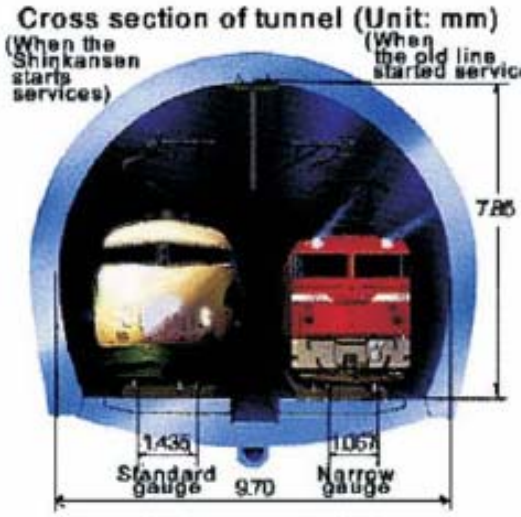
MAP OF SEIKAN TUNNEL

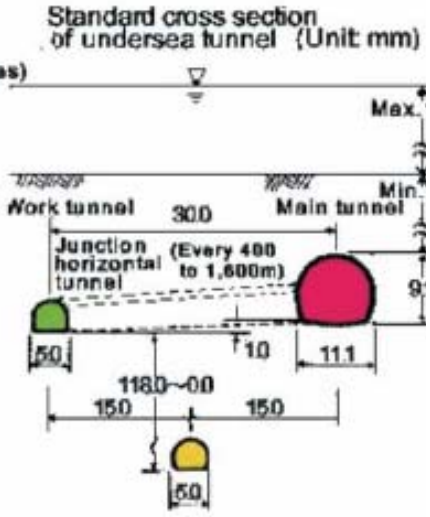




View of main tunnel completed section, showing gallery connect to service tunnel on left side.

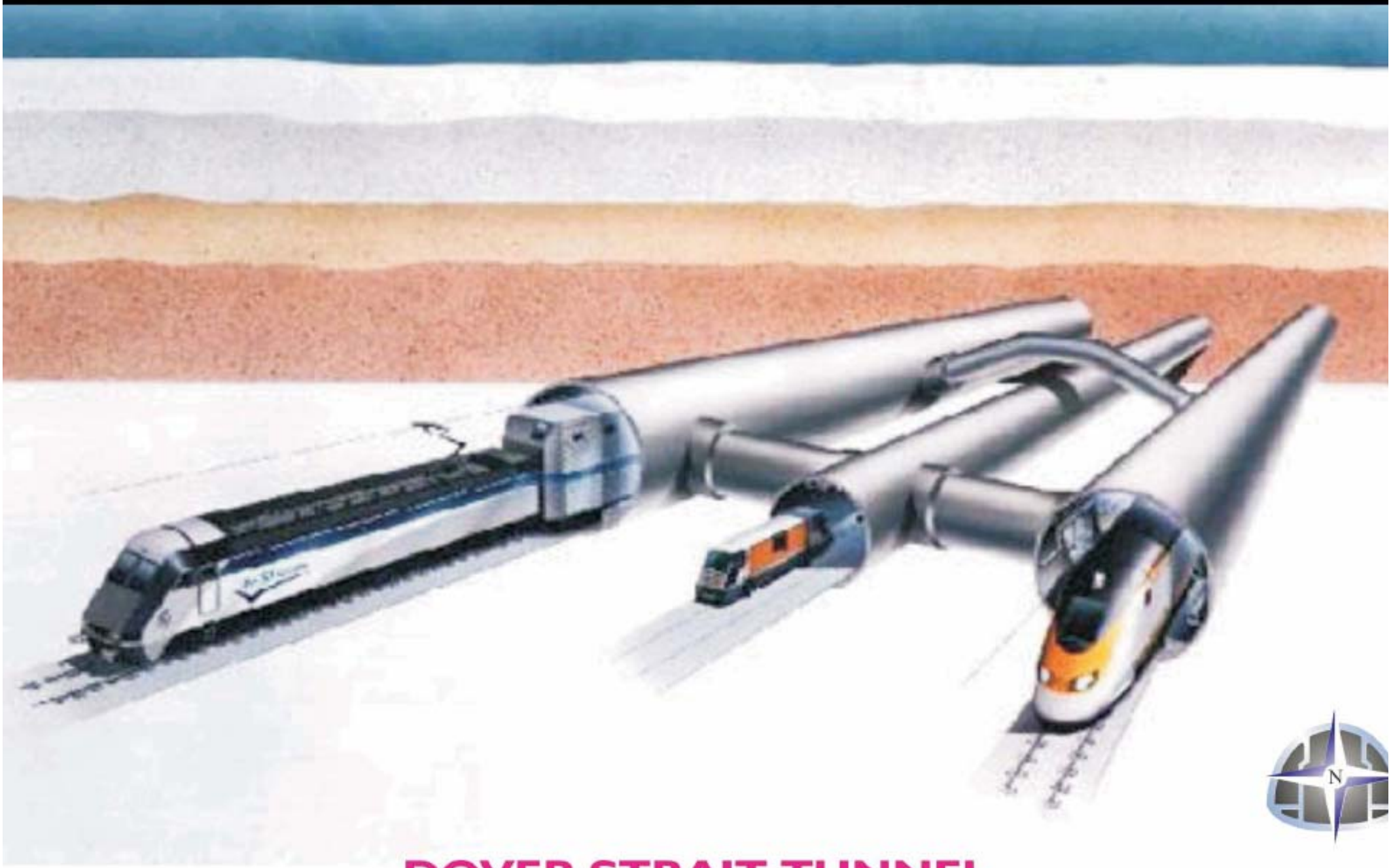




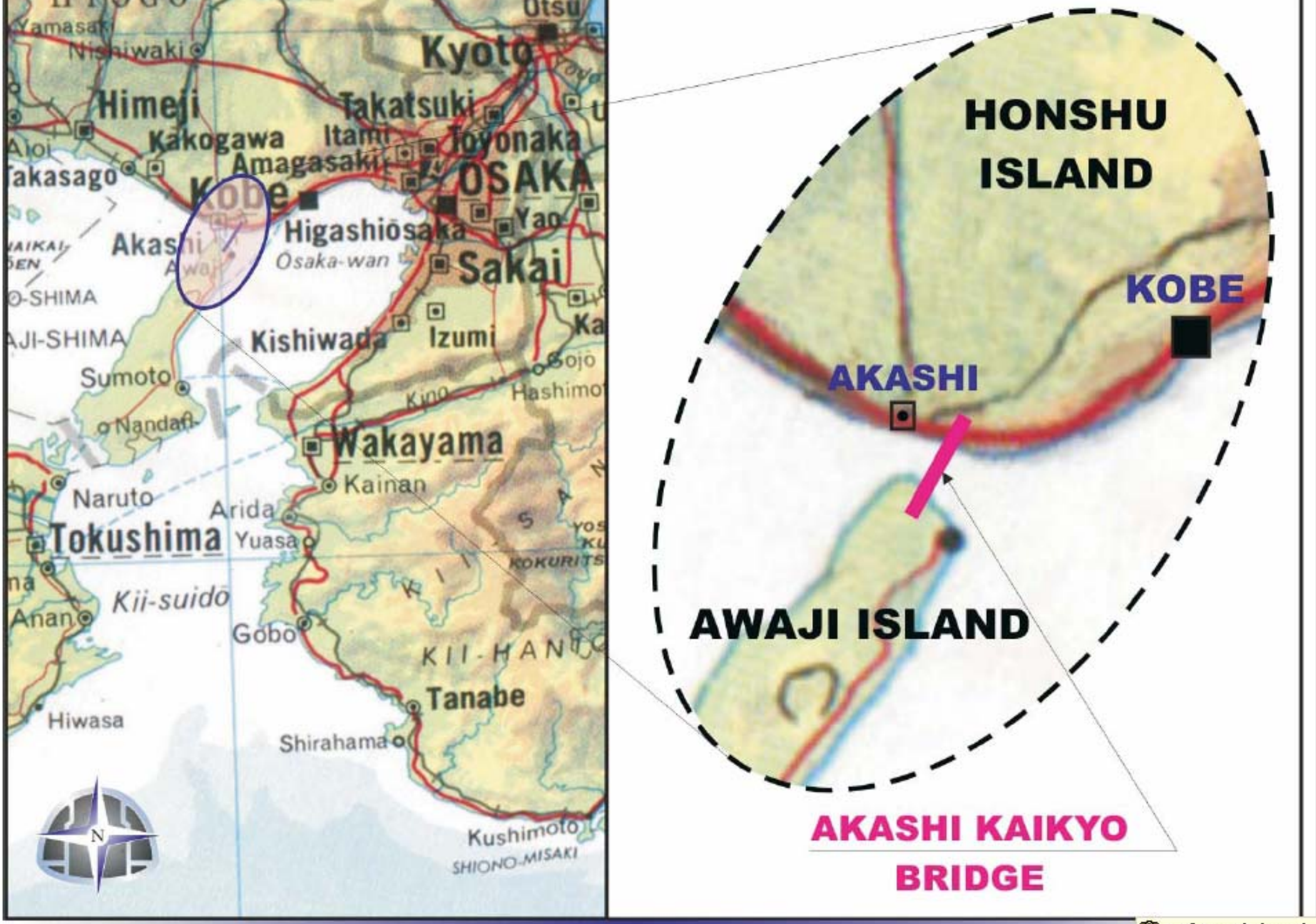


SEIKAN TUNNEL

MAP OF DOVER STRAIT TUNNEL



DOVER STRAIT TUNNEL



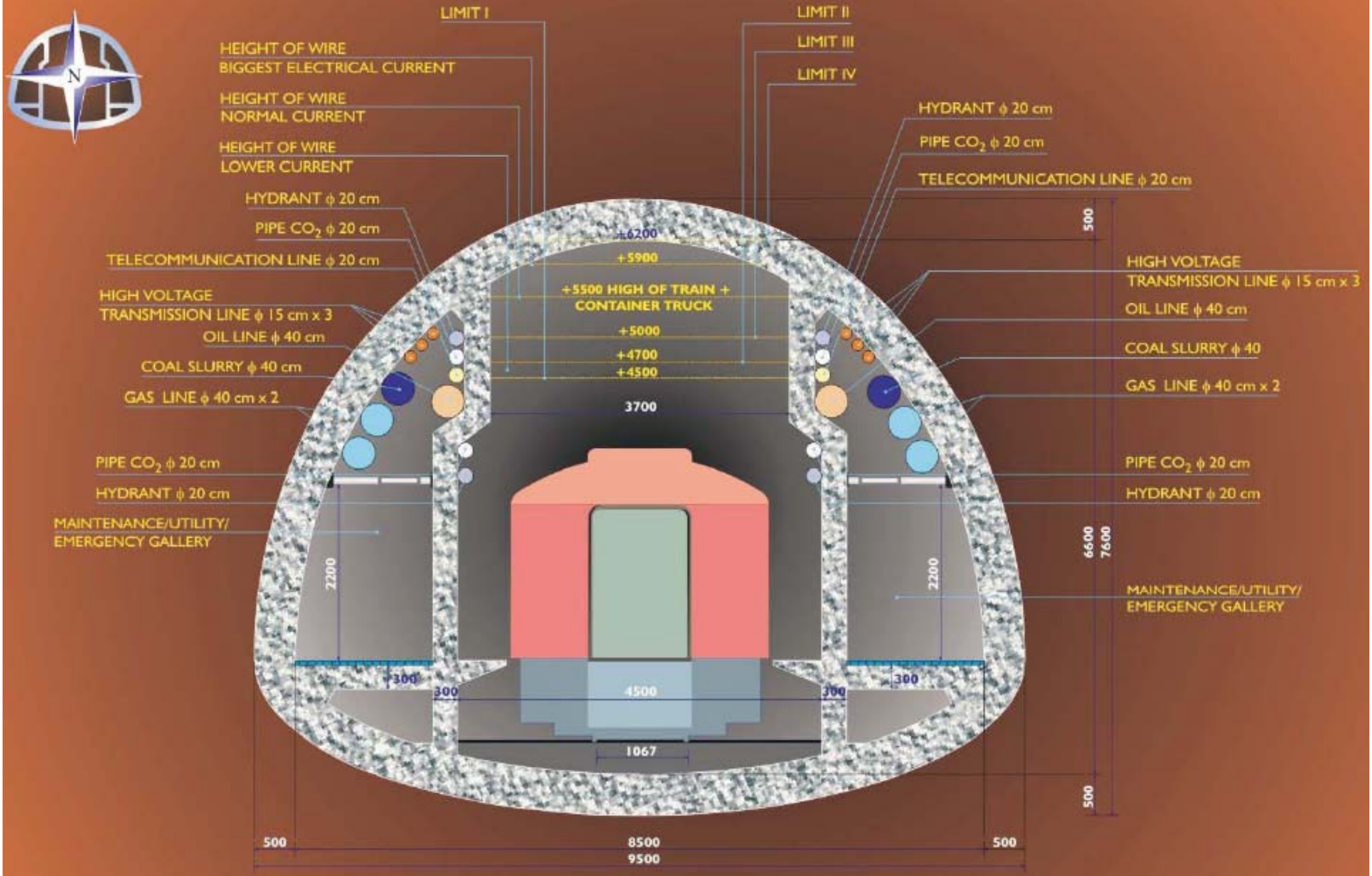
MAP OF AKASHI KAIKYO BRIDGE

AKASHI KAIKYO BRIDGE

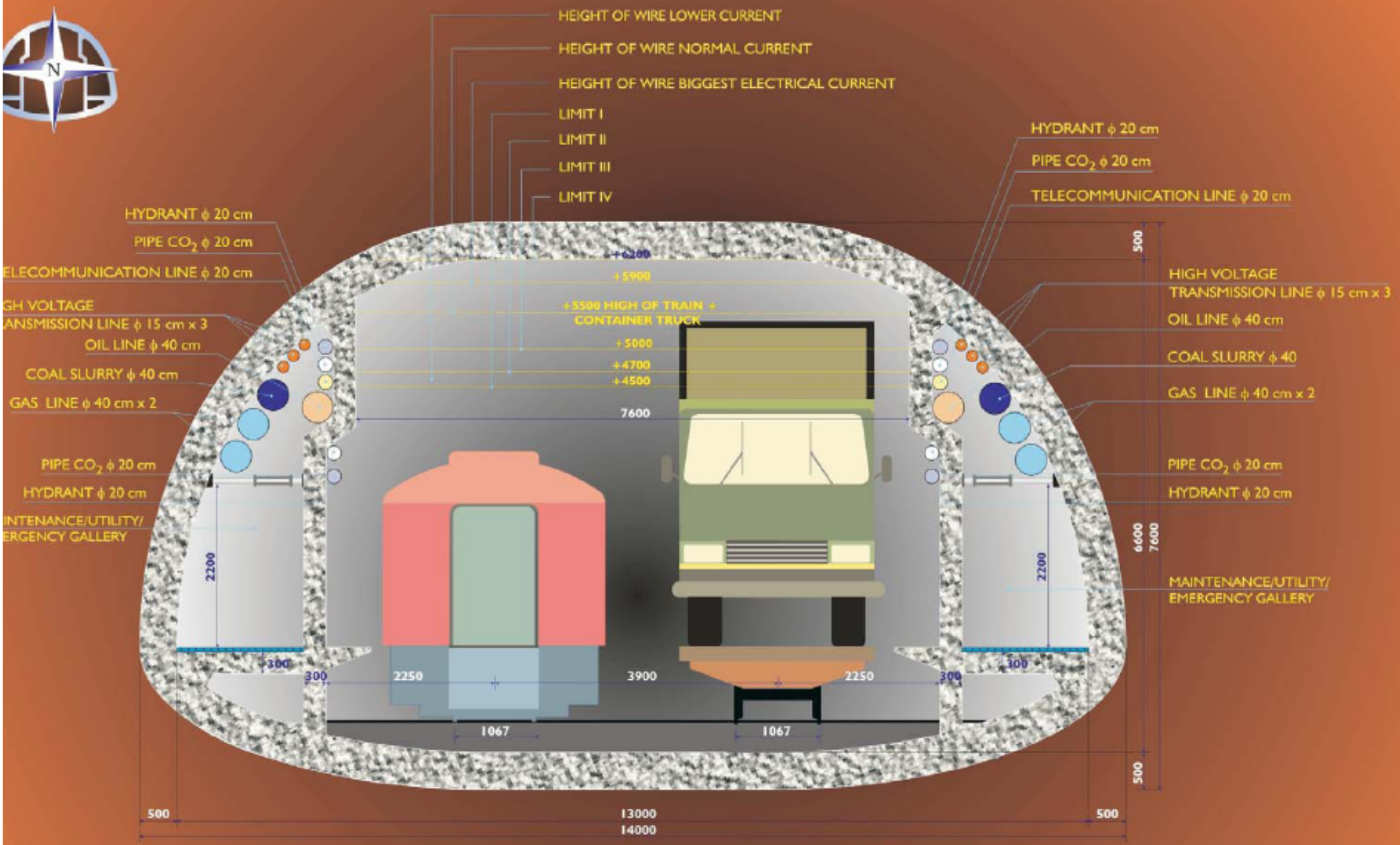
WHY TUNNEL ?

CRITERIA

- CAPEX
- BENEFIT
- RISK (TECHICAL / NATURAL)
- MOR

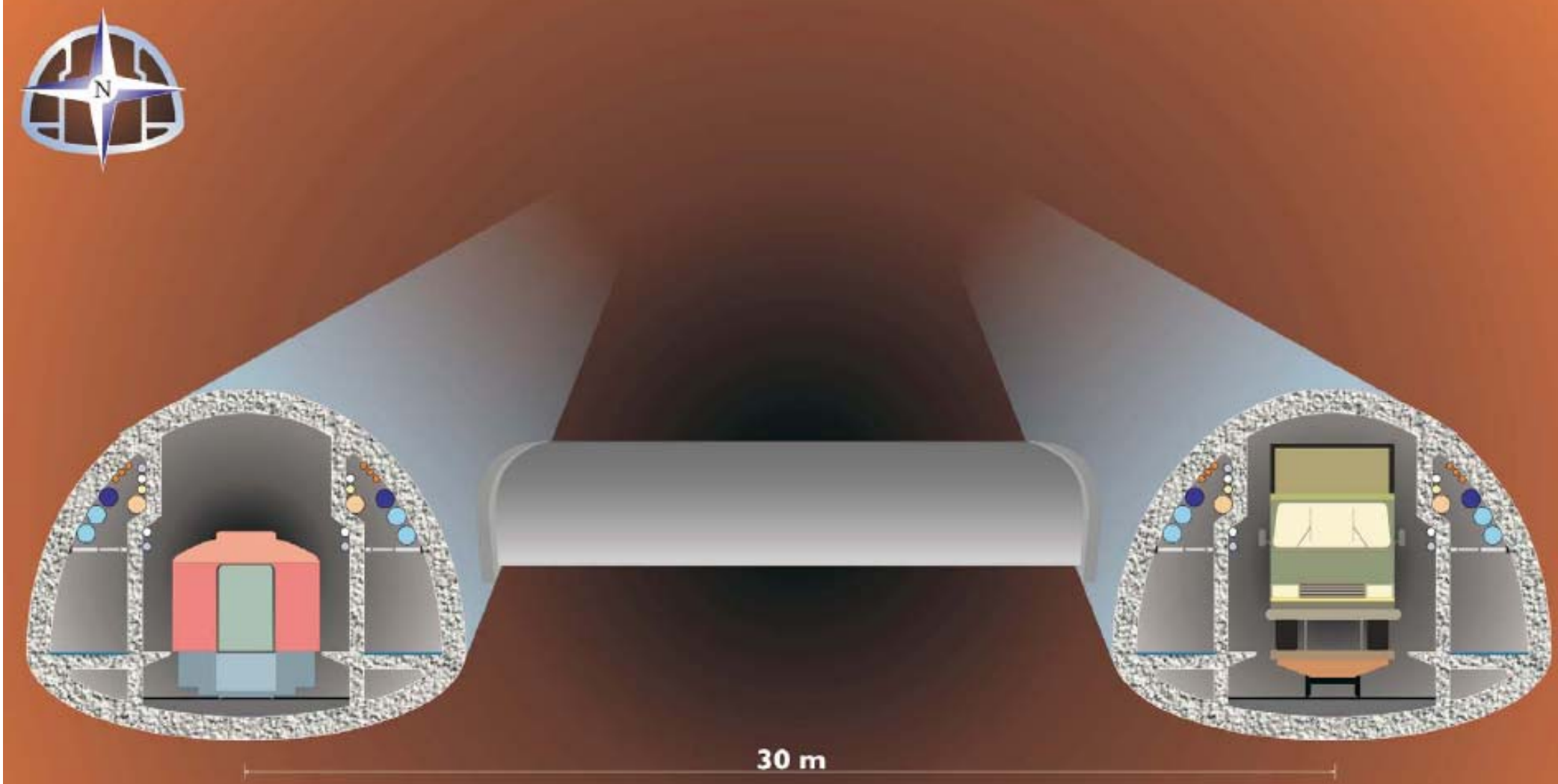


CROSS SECTION OF THE NUSANTARA TUNNEL™
(AREA = 57 M²)

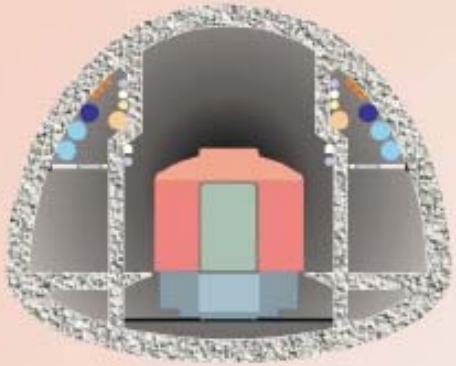


ALTERNATIVE CROSS SECTION OF THE NUSANTARA TUNNEL™

(AREA = 87 M²)

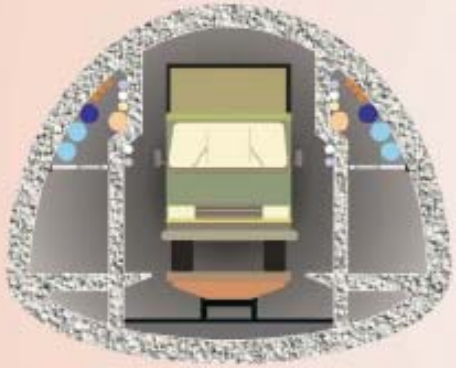


CROSS SECTION OF THE NUSANTARA TUNNEL™ (INTERLINKED BY CONNECTING TUNNELS)



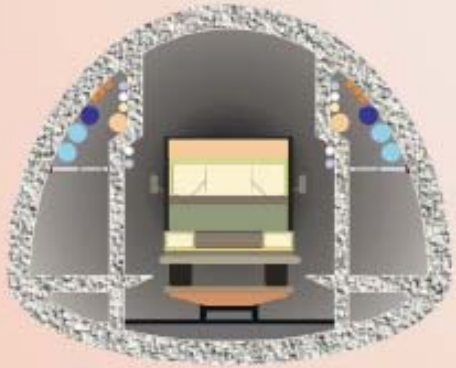
CLEARANCE FOR PASSENGER WAGON

WAGON DOUBLE DECKER (50 TONS)

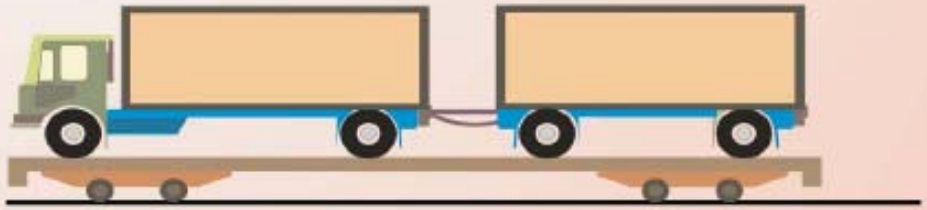


CLEARANCE FOR TRAILER

TRAILER (61 TONS)



CLEARANCE FOR TRUCK (DOUBLE)

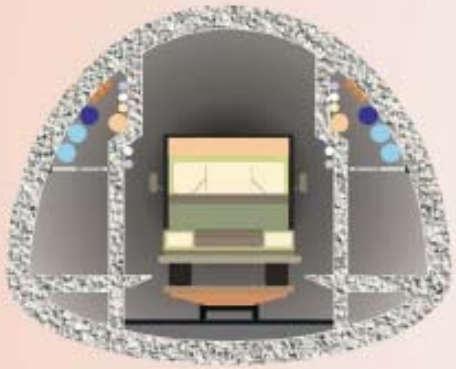


TRUCK COMBINATION (31TONS)

TRANSPORTATION MODE OF THE NUSANTARA TUNNEL™ BY ELECTRIC CAR TRAIN

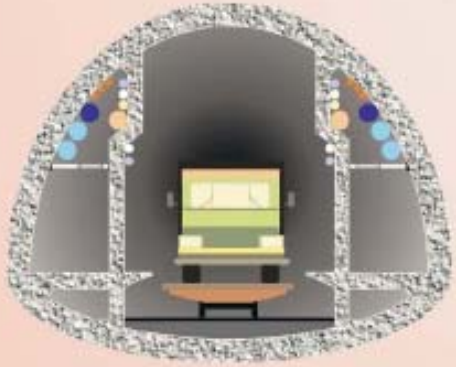
CLEARANCE FOR BUS

BUS (59 TONS)



CLEARANCE FOR TRUCK

TRUCK (66 TONS)



CLEARANCE FOR ¾ TRUCK

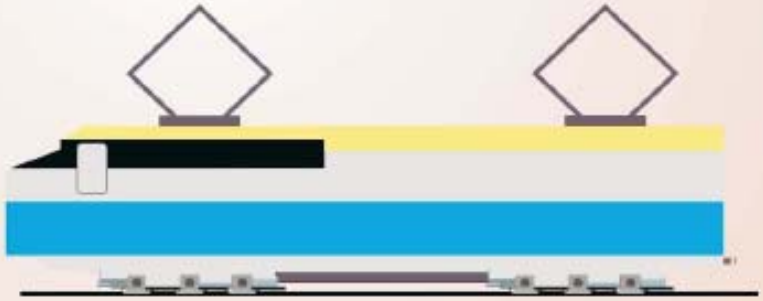
¾ TRUCK (47 TONS)

TRANSPORTATION MODE OF THE NUSANTARA TUNNEL™ BY ELECTRIC CAR TRAIN (cont.)

CLEARANCE FOR CARS

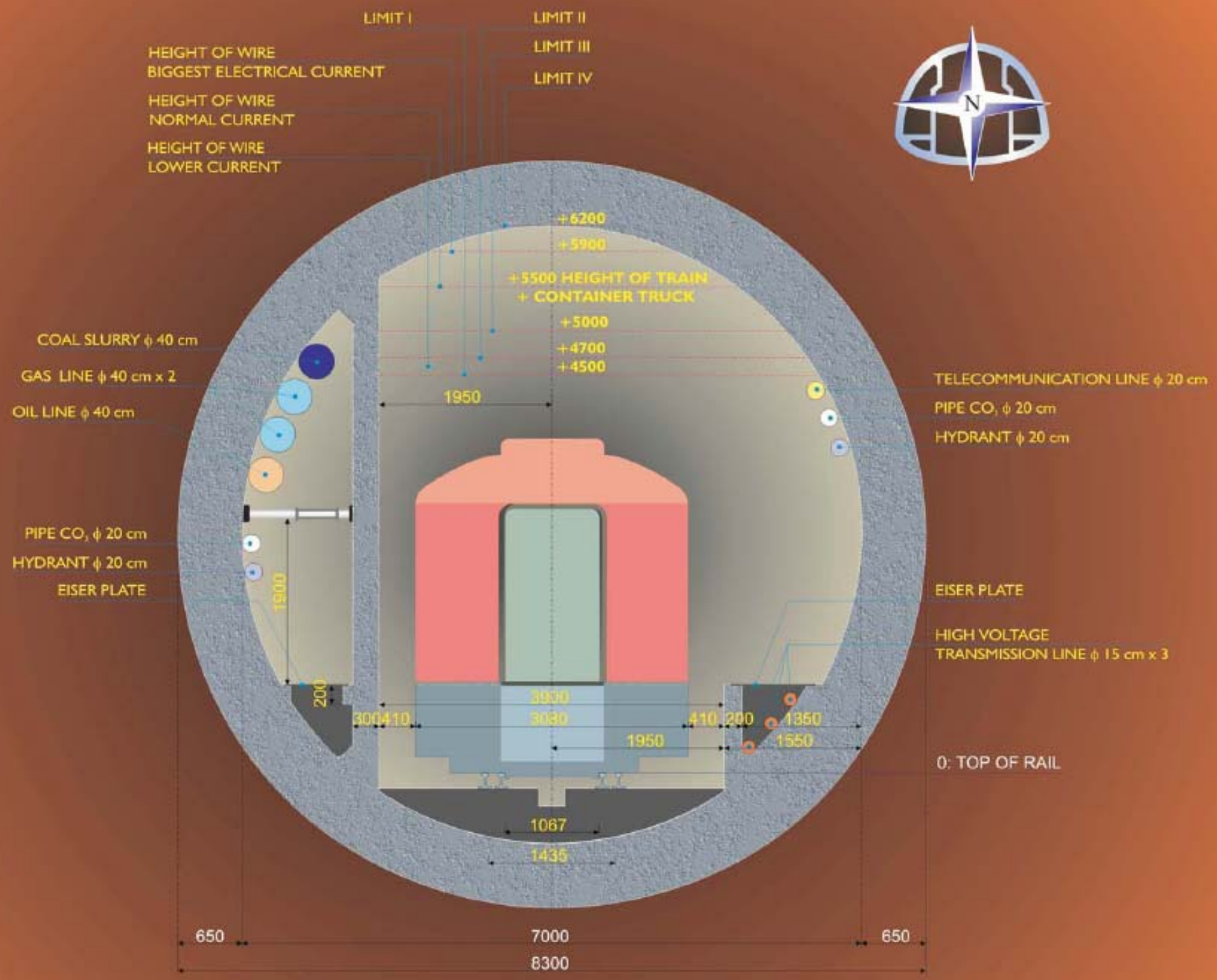
CARS (55 TONS)

CLEARANCE FOR LOC.

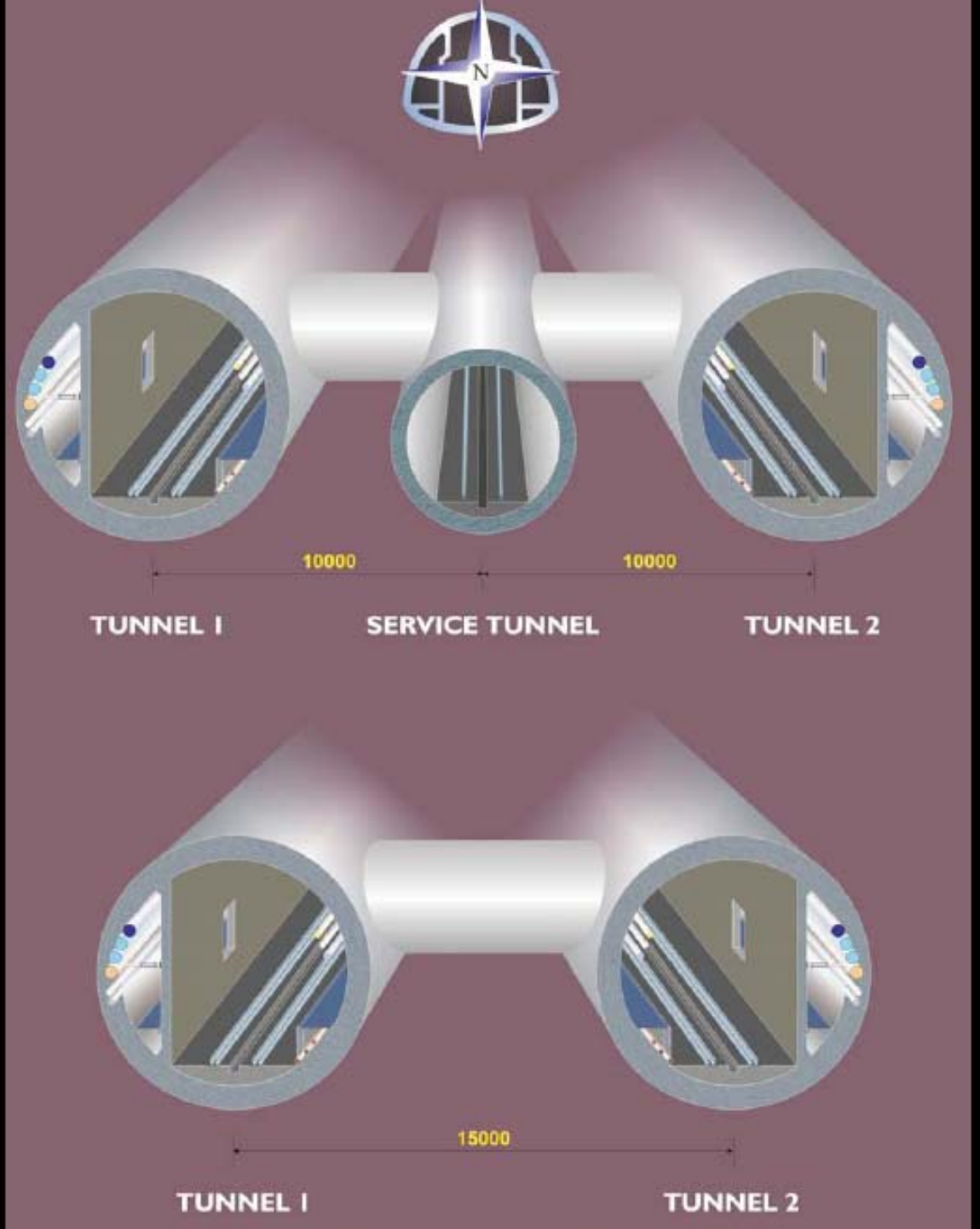


ELECTRIC LOCOMOTIVE

TRANSPORTATION MODE OF THE NUSANTARA TUNNEL™ BY ELECTRIC CAR TRAIN (cont.)



ALTERNATIVE CROSS SECTION OF THE NUSANTARA TUNNEL™
(AREA = 54.1 M²)

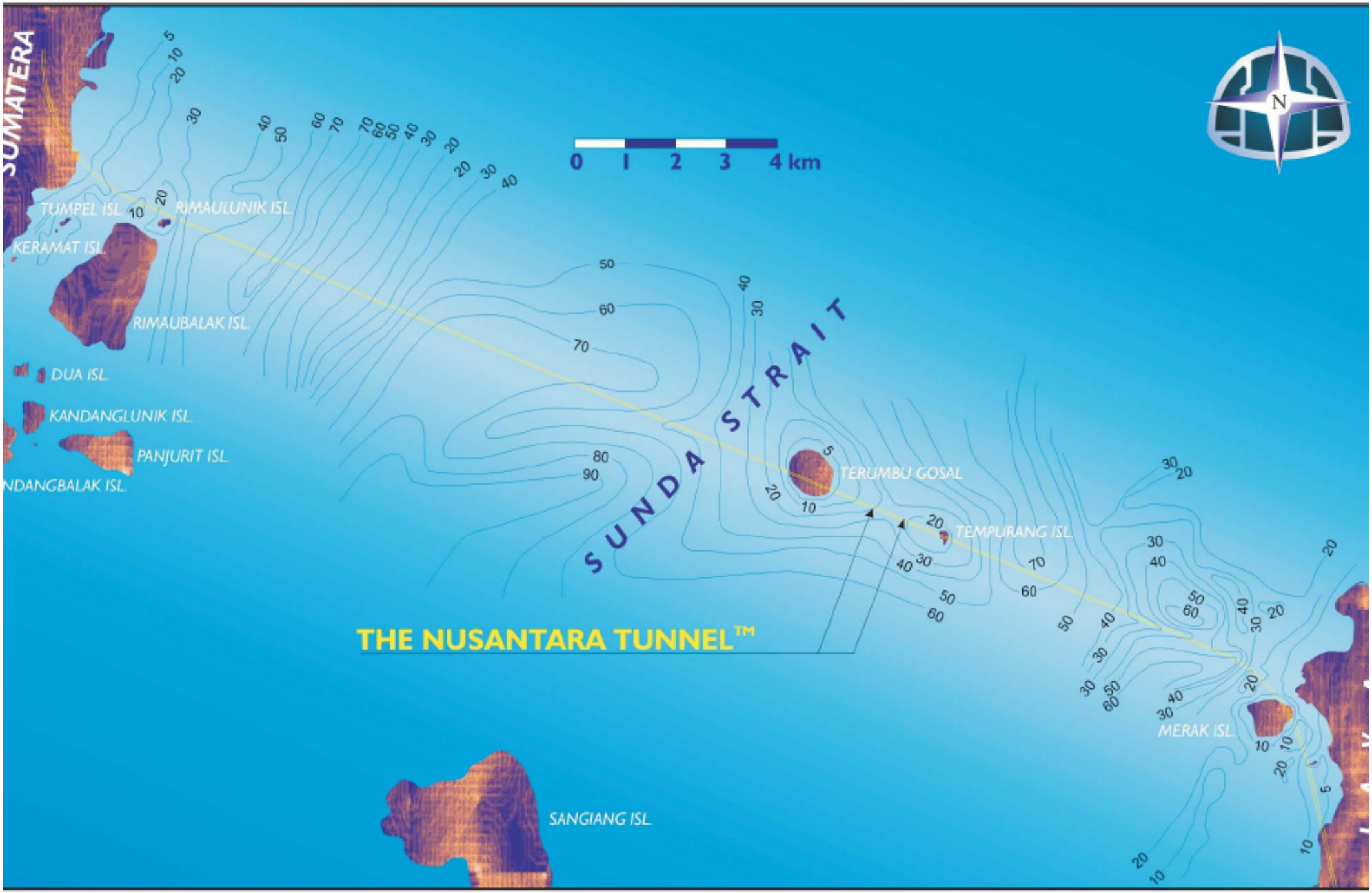


ALTERNATIVE 1 AND ALTERNATIVE 2
CROSS SECTION OF THE NUSANTARA TUNNEL™
INTERLINKED BY CONNECTING TUNNELS

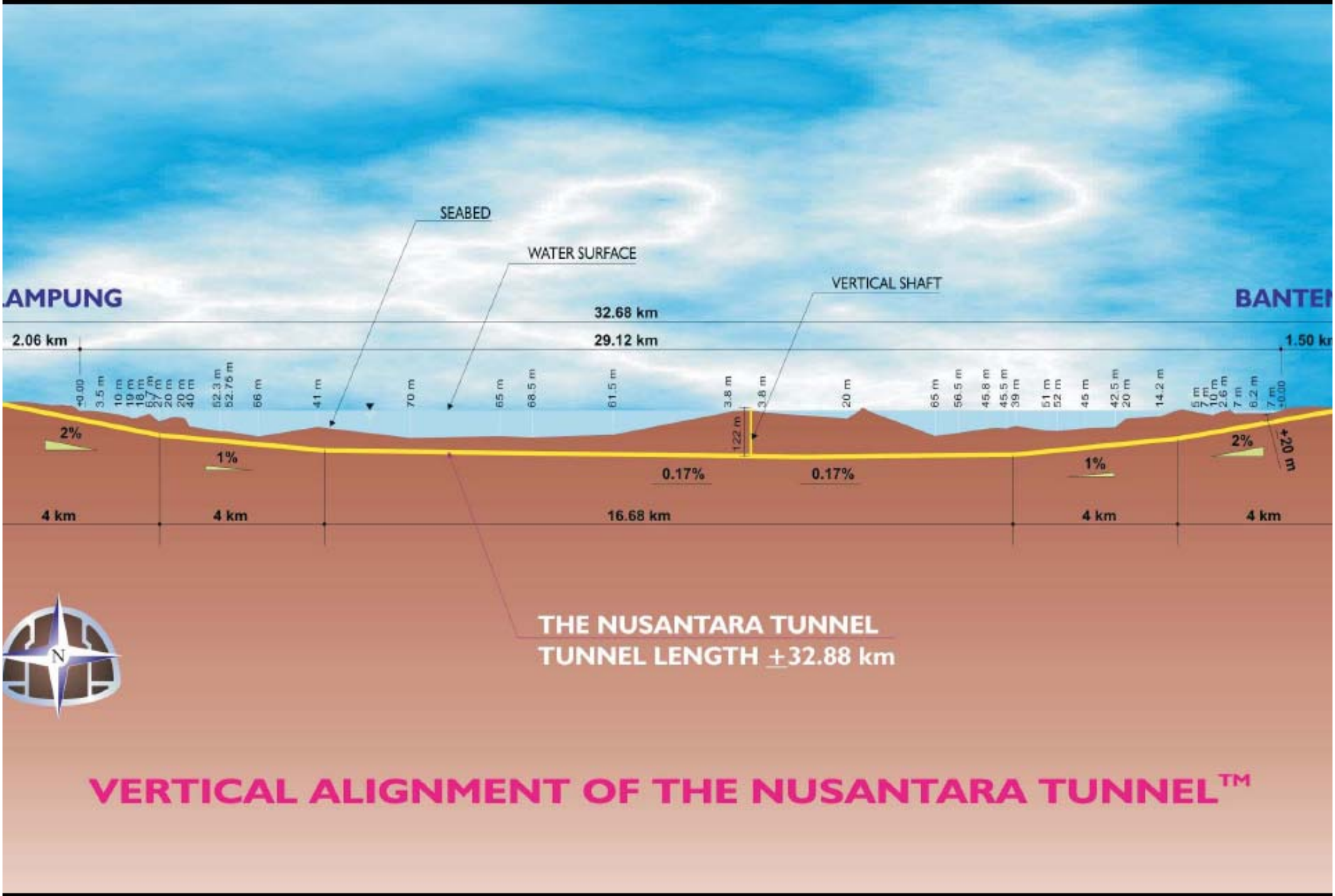
TECHNICAL DATA

OF THE NUSANTARA TUNNEL™

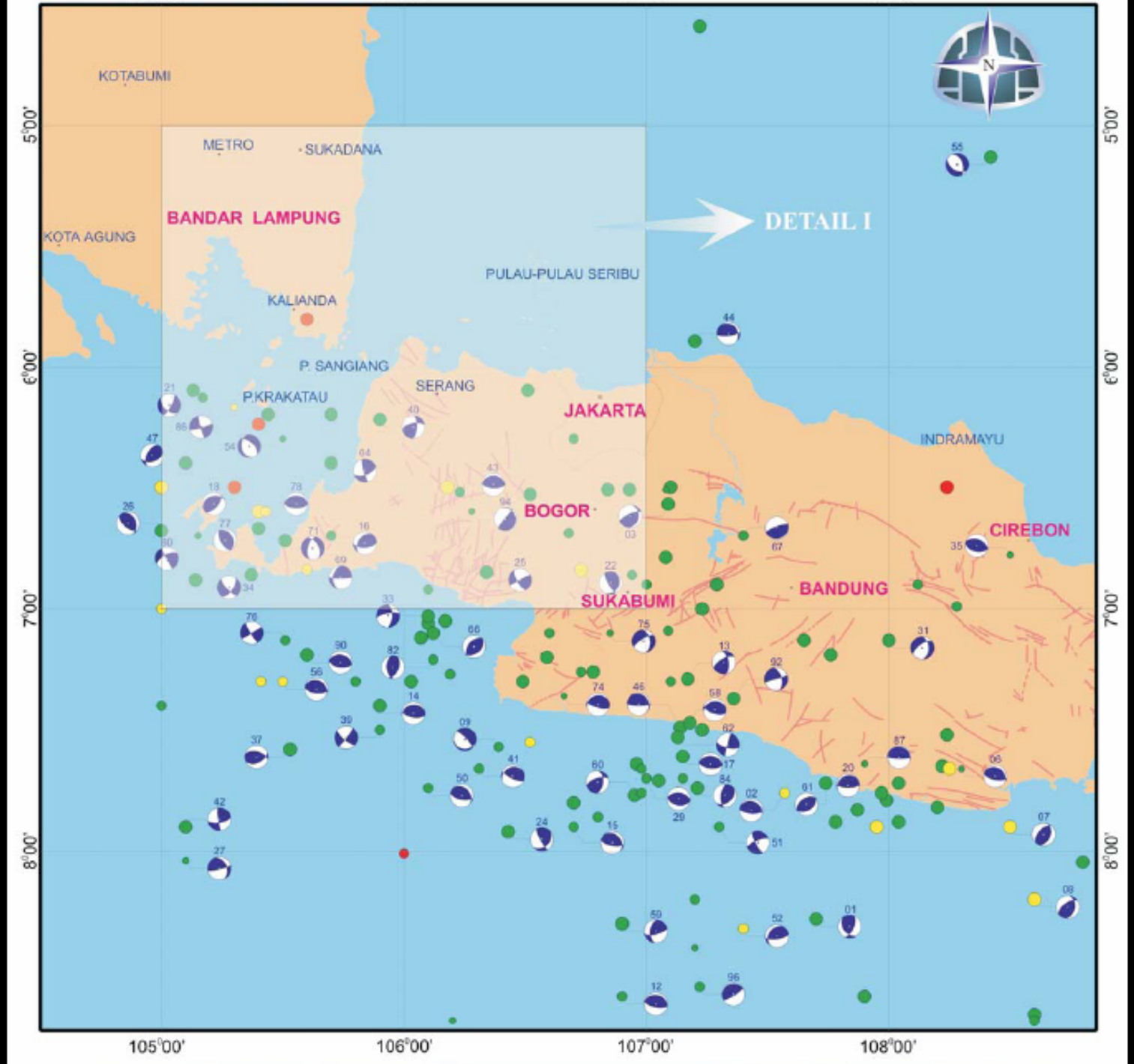
- Single / Double track
- Total length: 32.88 km
- Undersea portion: 26. 3 km
- Underground portion:
  2.06 km (in Lampung) and 1.5 km (in Banten) = 3.56 km
- Depth: 40 m below seabed
- Inclination: maximum 2%
- Cross section: 50 m^2 / 87 m^2
- Minimum radius of horizontal alignment: 3,000 meters



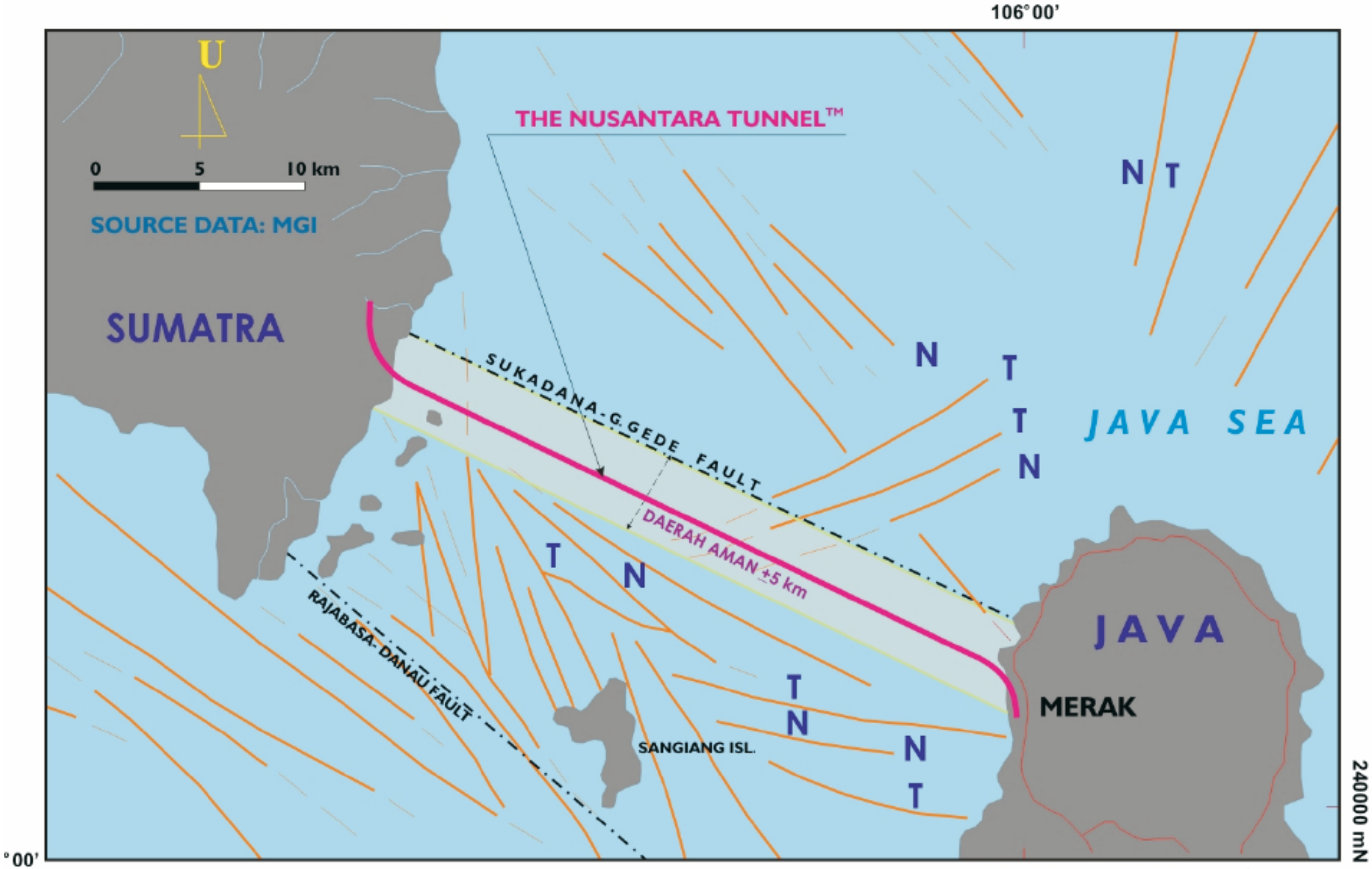
BATHYMETRIC OF SUNDA STRAIT



VERTICAL ALIGNMENT OF THE NUSANTARA TUNNEL™



THE SEISMICITY OF SUNDA STRAIT
YEAR 1913 - 2001
MAGNITUDE ≥ 3.0 SR



KETERANGAN:

: Struktur Sesar

: Lipatan Akibat Seretan

: Struktur Sesar Diperkirakan

N / T : Lipatan Akibat Seretan

PETA POLA STRUKTUR LOKASI "THE NUST"

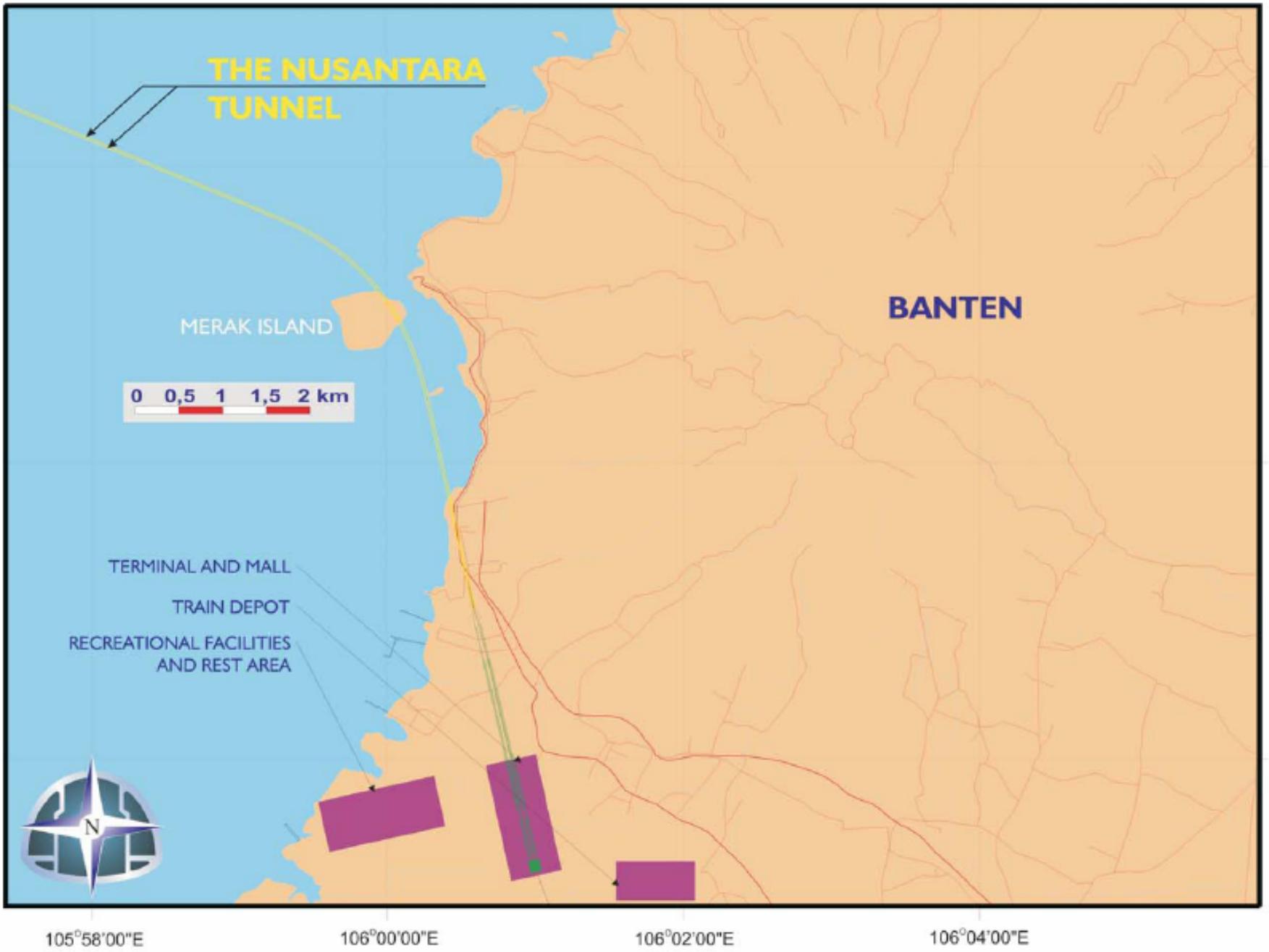
STAKEHOLDERS OF THE NUSANTARA TUNNEL™ SYSTEM

NO	STAKEHOLDERS	CONTRIBUTION	BENEFITS
1	LOCAL GOVERNMENT OF LAMPUNG PROVINCE	CONCESSION AREA (200 YEARS), FACILITIES, SECURITY, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), ECONOMIC GROWTH, INCOME TAX, PROSPERITY
2	LOCAL GOVERNMENT OF BANTEN PROVINCE	CONCESSION AREA (200 YEARS), FACILITIES, SECURITY, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), ECONOMIC GROWTH, INCOME TAX, PROSPERITY
3	GOVERNMENT OF REPUBLIC OF INDONESIA	LEGAL WARRANTY AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SOCIAL AND POLITICAL INCENTIVES, INCOME TAX, NATIONAL GROWTH
4	PT KERETA API INDONESIA	RAILWAY TRACK, SUPPORTING FACILITIES & ACCESSORIES, DEPOT, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS
5	STATE OWNED OIL & GAS COMPANY OF INDONESIA (PERTAMINA)	OIL AND GAS TERMINAL & PIPING FACILITIES & ACCESSORIES, DEPOT, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY
6	PT PLN PERSERO	SWITCH YARD, TRANSMISSION LINE & ITS FACILITIES & ACCESSORIES, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY
7	PT BUKIT ASAM	SLURRY PUMPING STATION, PIPING FACILITIES & ACCESSORIES, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY
8	PERUSAHAAN GAS NEGARA	GAS TERMINAL, PIPING FACILITIES & ACCESSORIES, DEPOT, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY
9	PT TELKOM PERSERO	TRANSMISSION LINE & ITS FACILITIES & ACCESSORIES, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY
10	INDOSAT	TRANSMISSION LINE & ITS FACILITIES & ACCESSORIES, AND CAPITAL INVESTMENT	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY
11	DEVELOPER	INVEST AND OPERATE ON: RESORT (HOTEL & COTTAGE), GOLF AREA, REST AREA, MALL, RECREATIONAL FACILITIES, TUNNELING, ENTERTAINMENT, ETC	SHARE (DIVIDEND), SERVICE, LONG TERM BUSINESS, GROWTH OPPORTUNITY

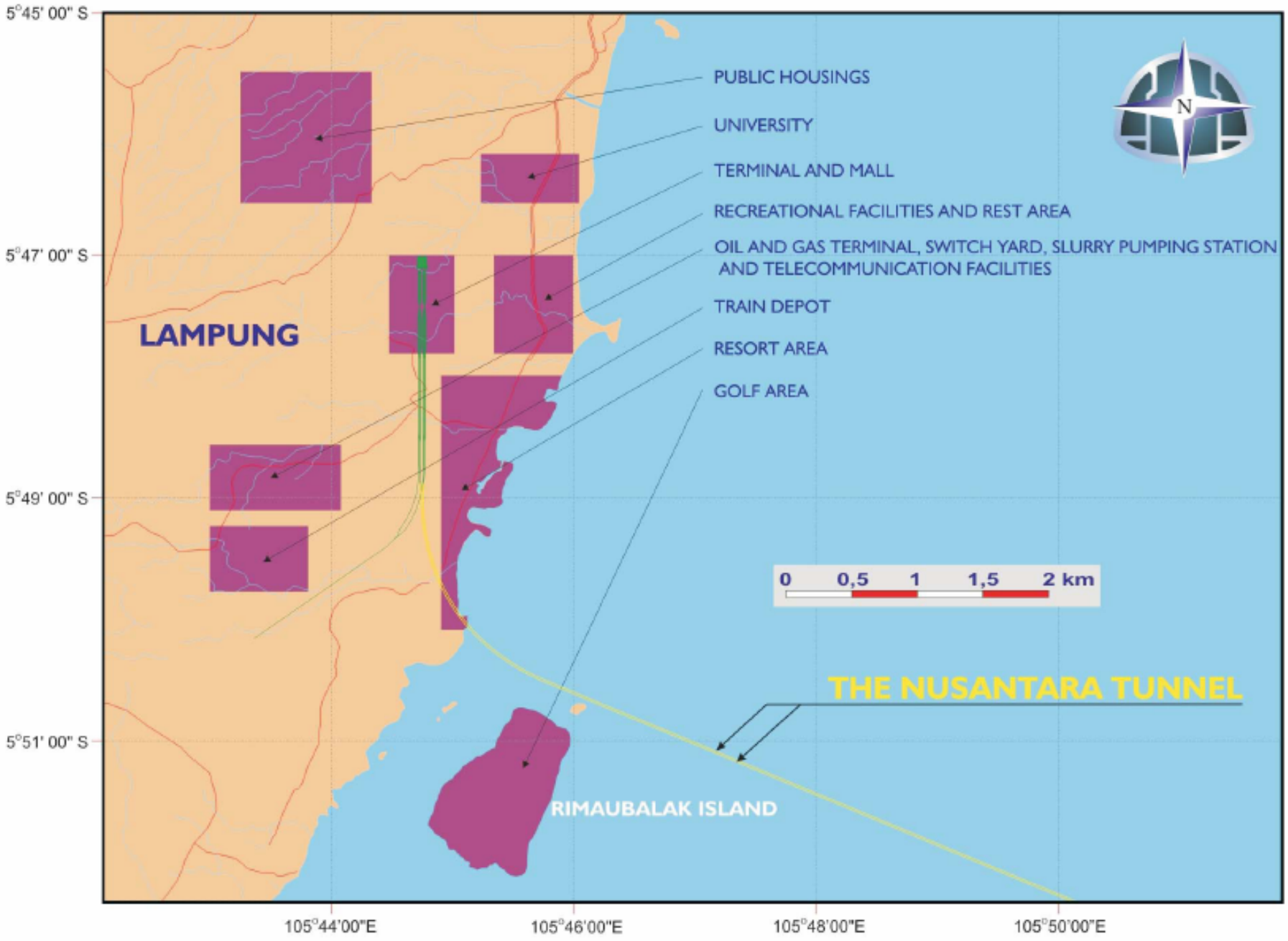
REGIONAL DEVELOPMENT PLAN
IN LAMPUNG AND BANTEN PROVINCES

Development of public facilities

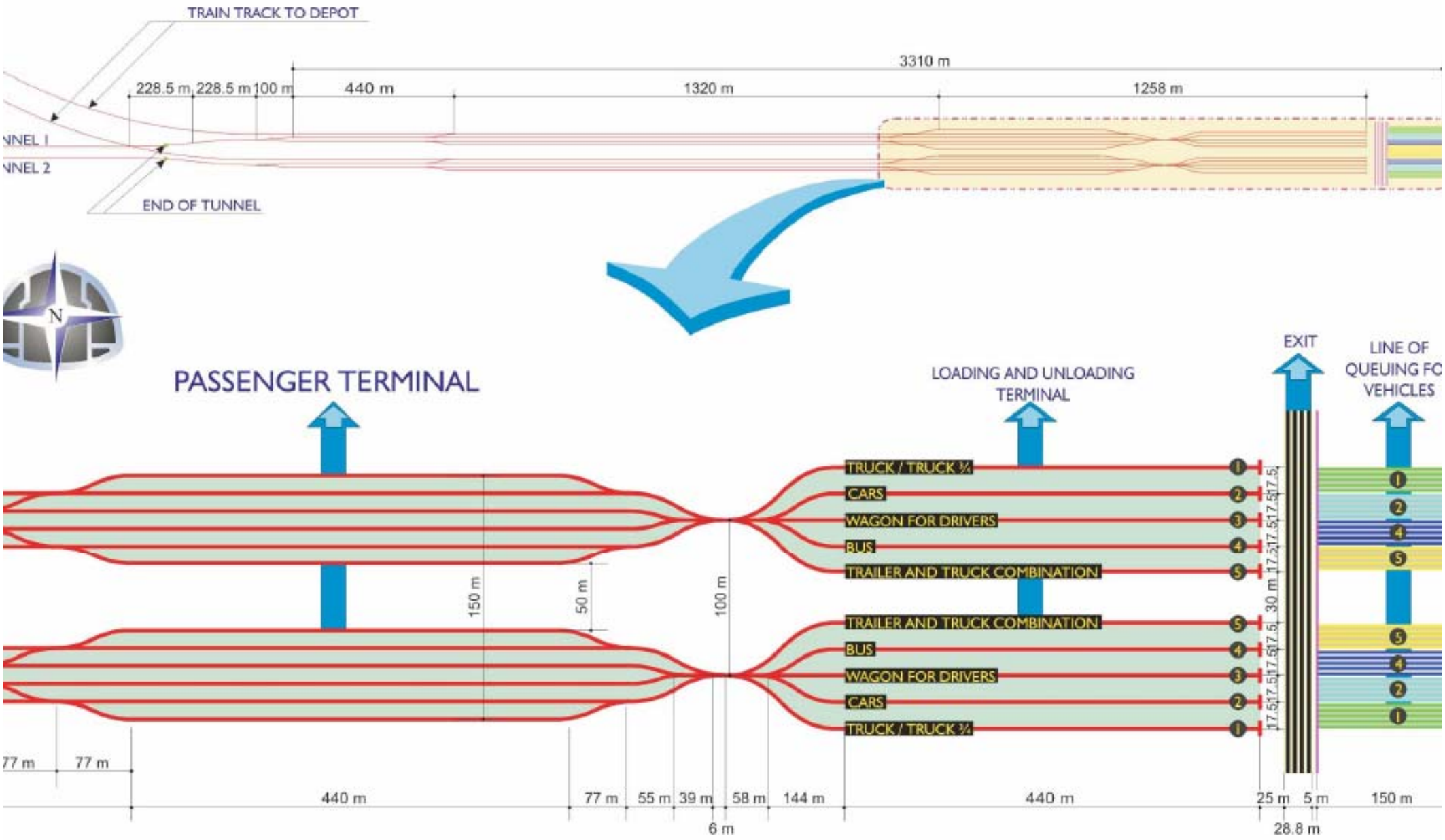
- ✓ Terminal and mall
- ✓ Recreational facilities
- ✓ Rest and resort areas
- ✓ Schools and university
- ✓ Golf and entertainment
- ✓ Public housings
- ✓ Depots for oil & gas, telecommunication, rolling stocks, coal slurry, pumping station, & switchyard



DEVELOPMENT PLAN
IN THE PROVINCE OF BANTEN



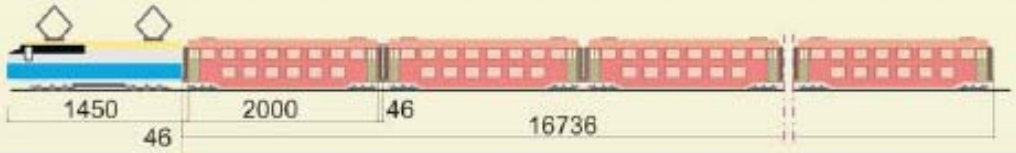
DEVELOPMENT PLAN IN THE PROVINCE OF LAMPUNG



OPERATION SCHEME IN BANTEN AND LAMPUNG TERMINALS

CAPACITY OF
THE NUSANTARA TUNNEL™
(SINGLE TRACK)

- Standard operation
  6,000 pcu per day ⇒ 30,000 passengers per day or
  10.8 million passengers per year
- Maximum operation
  12,500 pcu per day ⇒ 62,500 passengers per day or
  22.5 million passengers per year
- Special operation
  15,500 pcu per day ⇒ 77,500 passengers per day or
  30 million passengers per year

NO	TYPE OF VEHICLE	STANDARD OPERATION	NUMBER OF WAGON	WEIGHT OF SERIES (TON)*	LENGTH OF SERIES (M)***
1	WAGON FOR PASSENGER		8 wagons	400	167
2a	TRAILER		8 wagons	488	137
2b	TRUCK COMBINATION	OR  	8 wagons	488	137
3	BUS		8 wagons	472	185
4a	TRUCK		8 wagons	528	137
4b	¾ TRUCK	OR  	8 wagons	376	137
5	CAR		8 wagons	424	185
				~2300	~800

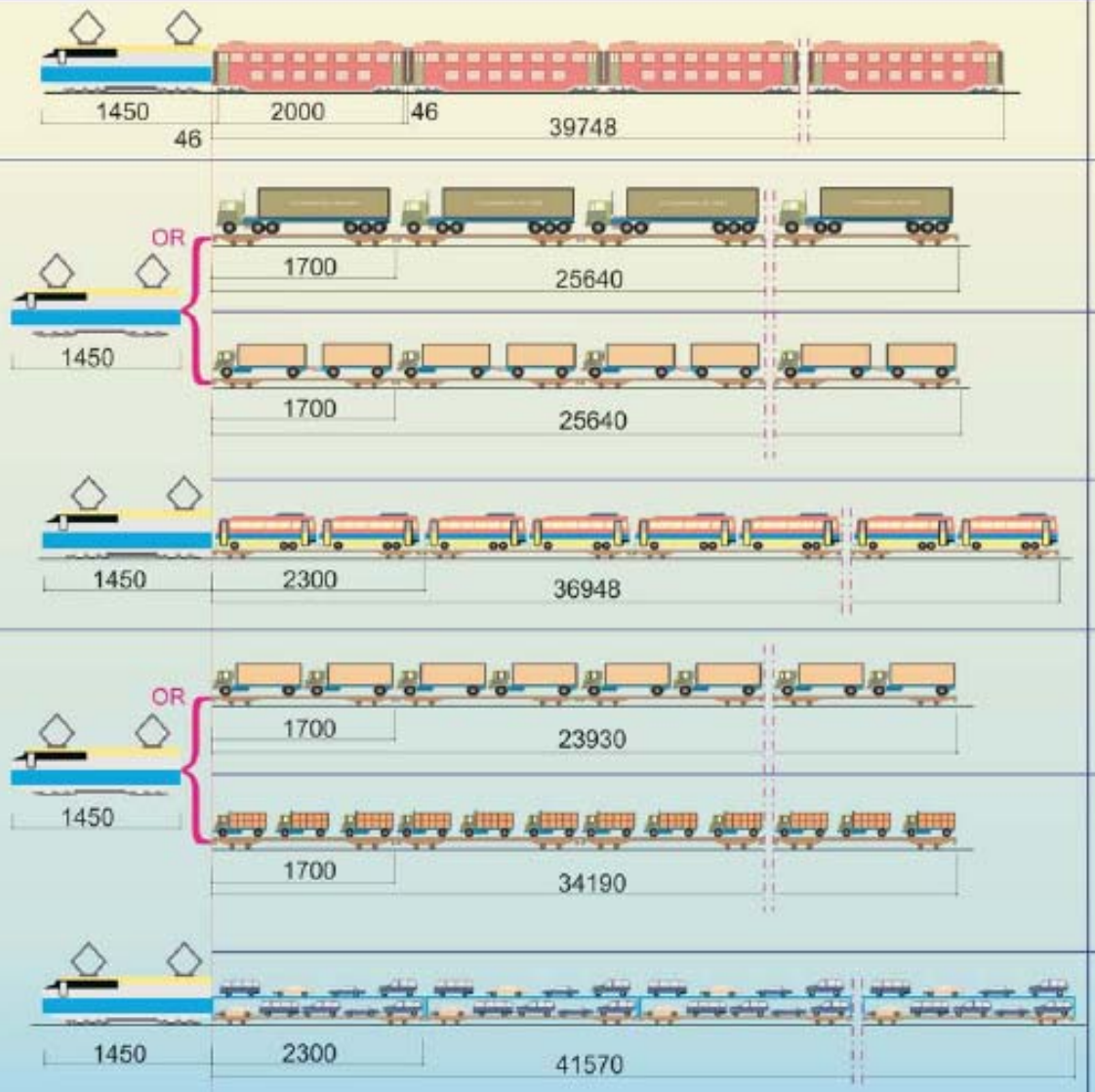
NOTE:

* WEIGHT OF SERIES DOES NOT INCLUDE WEIGHT OF LOC.

*** LENGTH OF SERIES DOES NOT INCLUDE LENGTH OF LOC.

MAXIMUM OPERATION

NO	TYPE OF VEHICLE	NUMBER OF WAGON	WEIGHT OF SERIES (TON)*	LENGTH OF SERIES (M)***
1	WAGON FOR PASSENGER	19 wagons	950	397
2a	TRAILER	15 wagons	915	256
2b	TRUCK COMBINATION	15 wagons	915	256
3	BUS	16 wagons	944	369
4a	TRUCK	14 wagons	924	239
4b	¾ TRUCK	20 wagons	940	342
5	CAR	18 wagons	954	416
			~4700	~1800



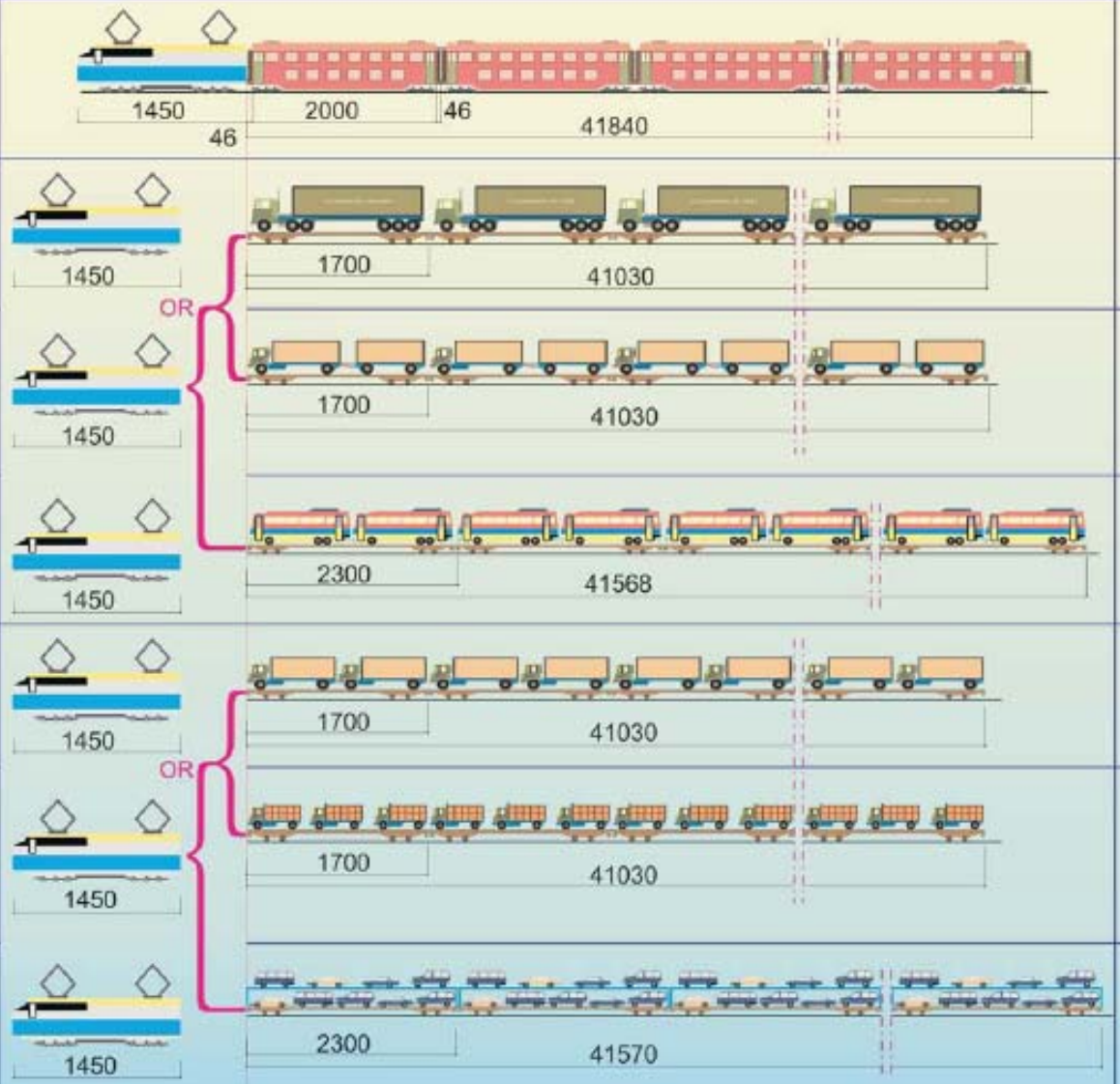
NOTE:

* WEIGHT OF SERIES DOES NOT INCLUDE WEIGHT OF LOC.

*** LENGTH OF SERIES DOES NOT INCLUDE LENGTH OF LOC.

SPECIAL OPERATION

NO	TYPE OF VEHICLE	NUMBER OF WAGON	WEIGHT OF SERIES (TON)*	LENGTH OF SERIES (M)***
1	WAGON FOR PASSENGER	20 wagons	1000	418
2a	TRAILER	24 wagons	1464	410
2b	TRUCK COMBINATION	24 wagons	1464	410
3	BUS	18 wagons	1062	416
4a	TRUCK	24 wagons	1584	410
4b	¾ TRUCK	24 wagons	1128	410
5	CAR	18 wagons	954	416
			~6000	~2000



NOTE:

* WEIGHT OF SERIES DOES NOT INCLUDE WEIGHT OF LOC.

*** LENGTH OF SERIES DOES NOT INCLUDE LENGTH OF LOC.

FINANCIAL ANALYSIS

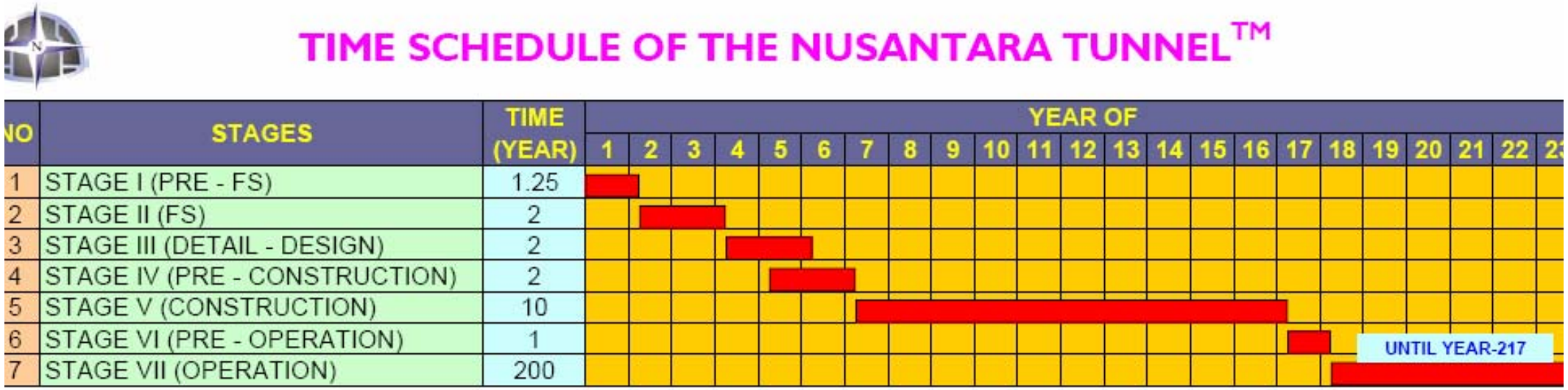
- Capital investment: US$ 1.5~2 billion / US$ 3~4 billion
- Maintenance and operation cost: US$ 4 million pa / US$ 8 million pa
- Toll fee: US$ 20 per pcu
- Pay back period: 35 years

General Comparison between Existing Ferry System and The Nusantara Tunnel ™

Description	Existing Ferry System	The Nusantara Tunnel ™
Capacity	13 million passengers 2 million cars (in 1999)	30 million passengers / 60 million passengers
Travelling Time	120 minutes	30 minutes
Loading/ Unloading Time	60 minutes	30 minutes
Waiting Time	60 minutes ~ 24 hours	60 minutes / 30 minutes
Transportation mode	Roll-on-roll-off ships (No Train nor 40-ft Container)	Roll-on-roll-off Electric car train
Toll Fee	US$ 8.5 (car + 5 passenger)	US$ 20 (car + 5 passenger)

TIME SCHEDULE OF THE NUSANTARA TUNNEL™

NO	STAGES	TIME (YEAR)	YEAR OF
1	STAGE I (PRE - FS)	1.25	
2	STAGE II (FS)	2	
3	STAGE III (DETAIL - DESIGN)	2	
4	STAGE IV (PRE - CONSTRUCTION)	2	
5	STAGE V (CONSTRUCTION)	10	
6	STAGE VI (PRE - OPERATION)	1	
7	STAGE VII (OPERATION)	200	



THE NUSANTARA TUNNEL INDONESIA™

Scope of Feasibility Study

NO		DESCRIPTION	TIME (months)	MONTH OF 2	4	6	8	10	12	14	16	18	20	22	24
1		**Studies:**													
	a	Environmental Impact Analysis	10												
	b	Financial, Economic, Social & Time Value Analyses	10												
	c	Material Requirement	6												
	d	Ordinances	10												
	e	Power & Water Demand	6												
	f	Natural Hazard Analysis: Seismic/Tsunami/Volcano/Marine Landslide	10												
	g	Demography	9												
	h	Safety & Rescue System	12												
	i	Management Information System and Information Technology	9												
	j	Risk Assessment	10												
2		**Field Surveys:**													
	a	Topographical & Aerial Mapping of the Banten and Lampung Sites	12												
	b	Bathymetrical Mapping	12												
	c	Geological Investigation	12												
	d	Seismic Refraction/Tomography	12												
	e	Geotechnical Drilling	18												
3		**Planning:**													
	a	Spatial	12												
	b	Regional Development	9												
	c	Transportation System	9												
4		**Preliminary Design:**													
	a	Tunnel and Its Supporting Facilities	10												
	b	Terminals and Their Supporting Facilities in Banten and Lampung Sites	10												
	c	Transportation System and Its Supporting Facilities	10												
	d	Safety & Rescue System and Its Supporting Facilities	12												

Note on Execution Strategy:

> Domestic resources will be fully mobilized to execute the FS

> The FS Quality Assurance and Quality Control will be performed by world class experts.

INDICATED CONSTRUCTION COST

▶ Nippon Koei (Japan)	US$ 3.52 billion
▶ ILF (Austria)	US$ 2.60 billion
▶ COWI (Denmark)	US$ 3.00 billion
▶ WIRTH Group (Germany/France)	US$ 2.60 billion
▶ KF Fjellsikring AS (Norway)	US$ 1.50 billion

THANK YOU

PT NUSANTARA TUNNEL INDONESIA

INTEGRATED INFRASTRUCTURE DEVELOPMENT