12-C. PHASED DEVELOPMENT PLAN

586. Based on the master plans and short-term development projects for Tanjung Priok and Bojonegara new port, the study team formulates phased development plans as shown in Figure 12-C-1 to Figure 12-C-2 considering cost effective process as well as easiness of construction work. The major points are as follows:

Tanjung Priok

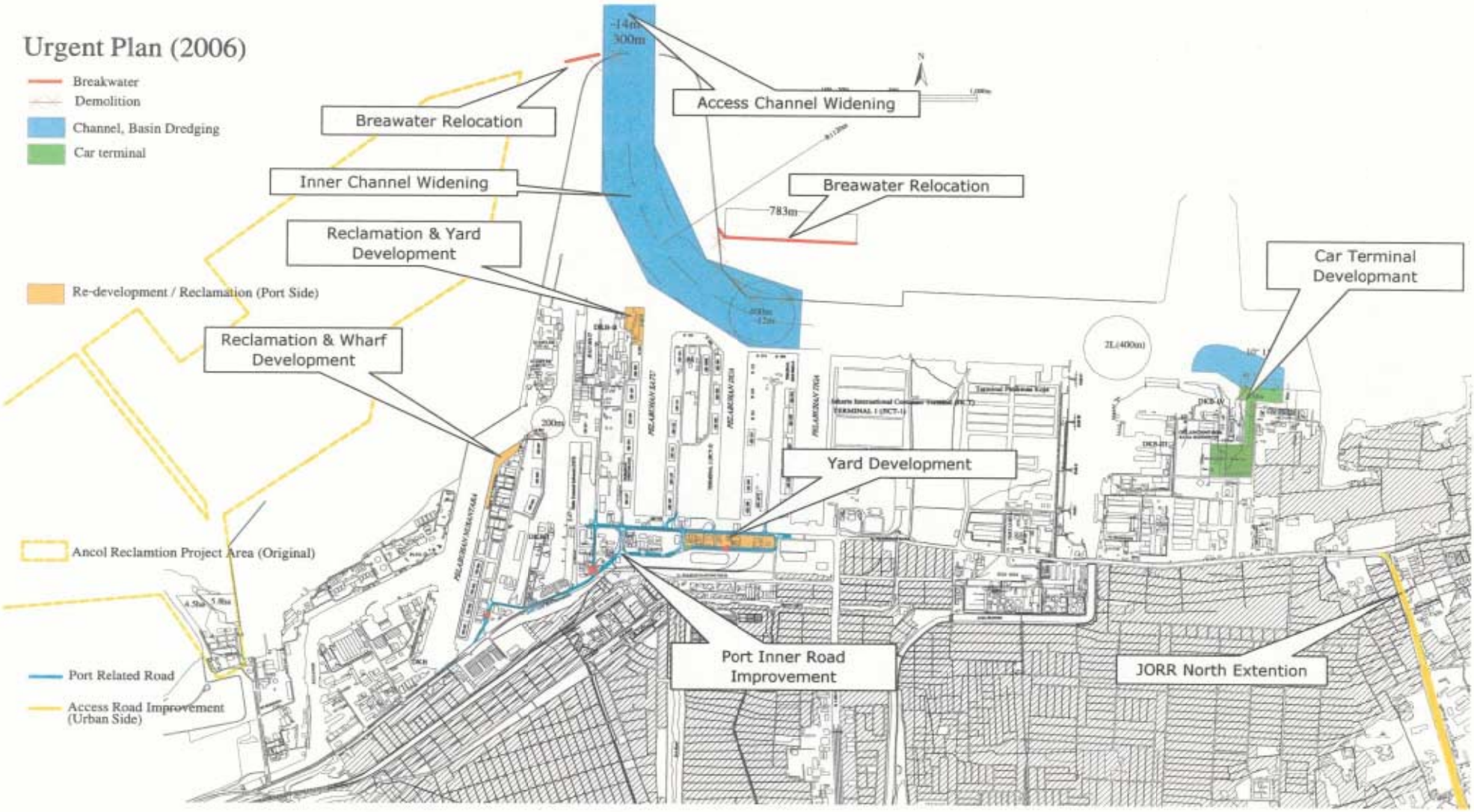
- Firstly, widening of the main channel and turning basin, development of an automobile terminal and improving the road situation in/around the port will be focused on to increase port capacity.
- Gradually, re-development of the existing land-use will be implemented followed by the development of East-Ancol. When starting the development of East-Ancol, new access channel (one-way) will be developed from the existing main channel by cutting a part of the west breakwater in order to reduce the dredging cost and development cost of a new breakwater.
- Development area in East-Ancol will be gradually expanded and the access channel for MTI terminal will be widened in accordance with the relocation of the military base.
- In the long term, development will be focused on the east area, including the relocation of PMB berth to offshore together with consolidation of international container terminal, expansion of some special wharves, and opening of the east channel for one-way traffic.
- East side development will be followed by development of a new area by reclamation. Consolidated dock yard, newly developed special wharves, and new Kalibaru port will be established here.

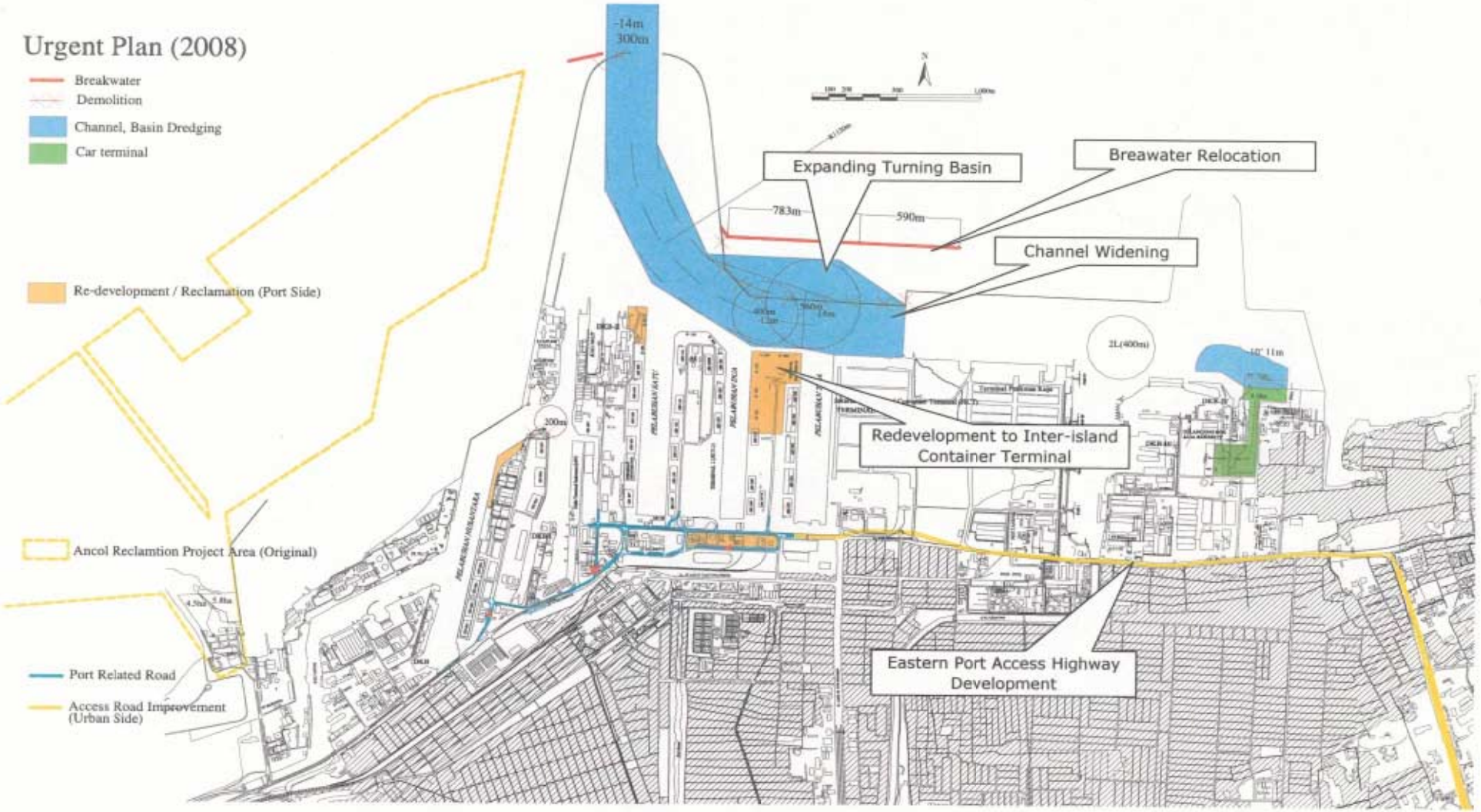
Bojonegara

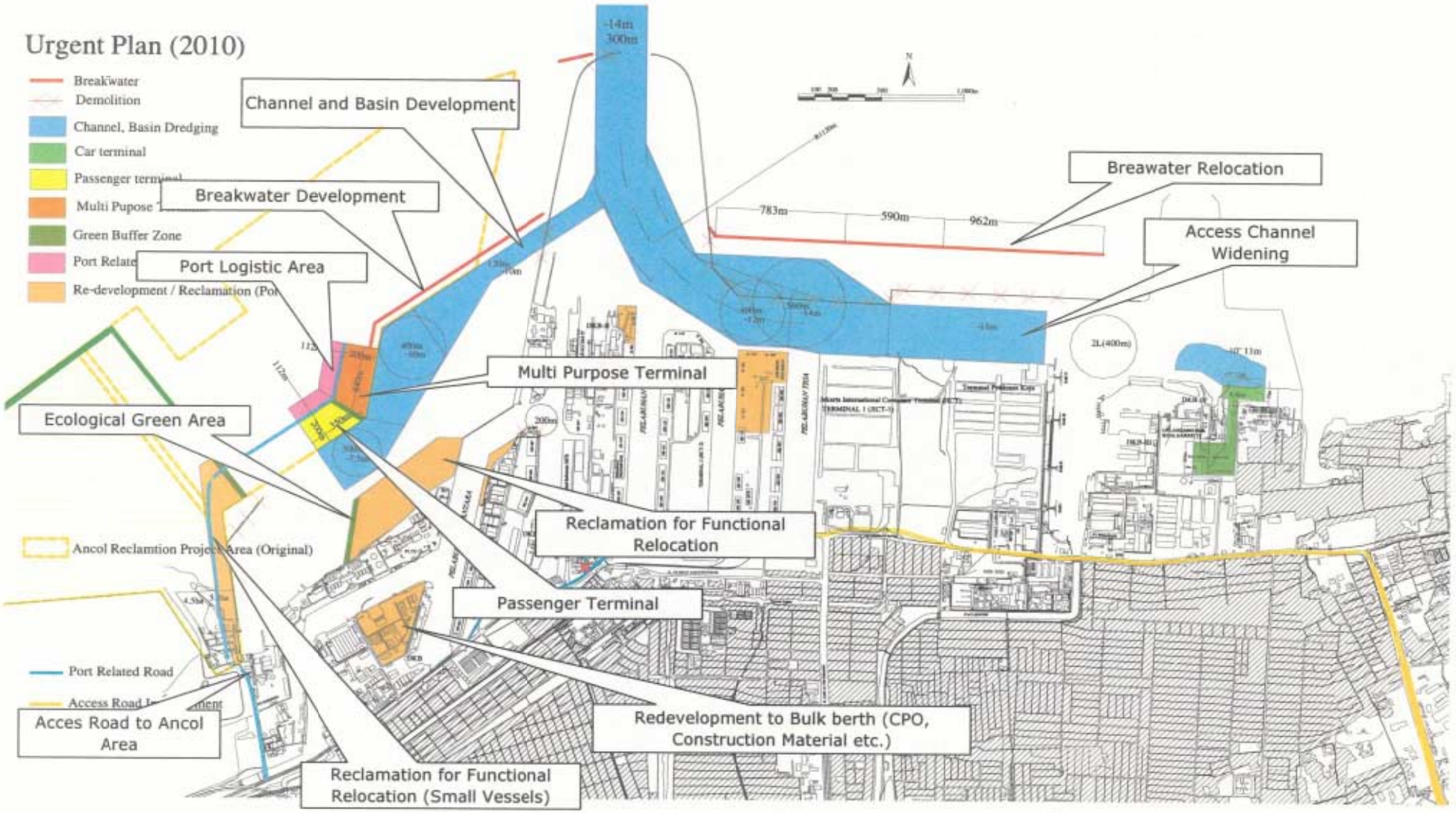
- Firstly, development of container terminal and multi purpose terminal will be carried out in the area sheltered by two small offshore islands.
- Ro-Ro terminal and other special berths will be developed when needed.
- In accordance with the increase of container demand, the container terminal will be gradually expanded along the coast line to the south-east direction together with the development of a breakwater.
- In the long term, cargo berths will be developed making use of two small offshore islands.

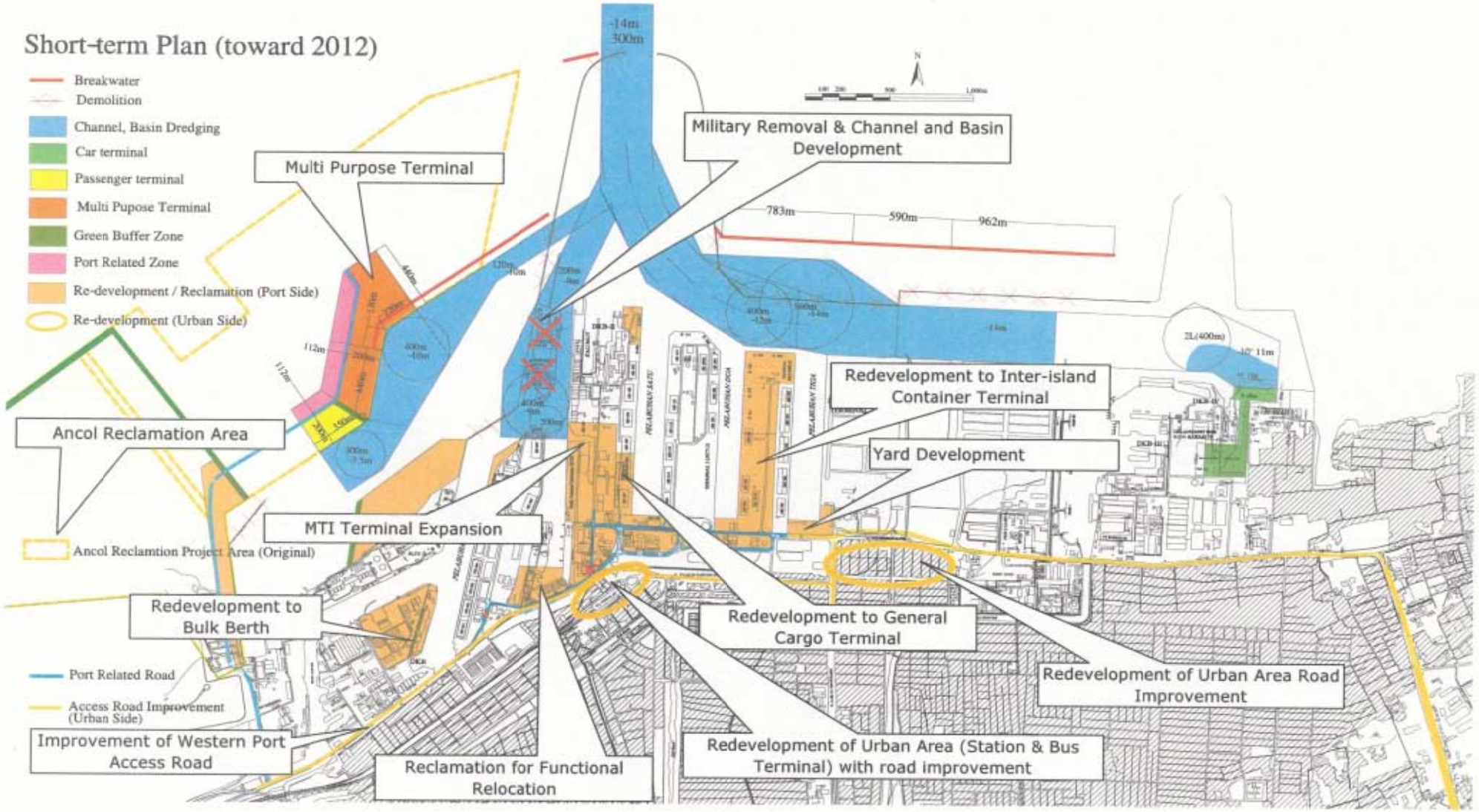
Figure 12-C-1 Phased Development Plan (Tanjung Priok)

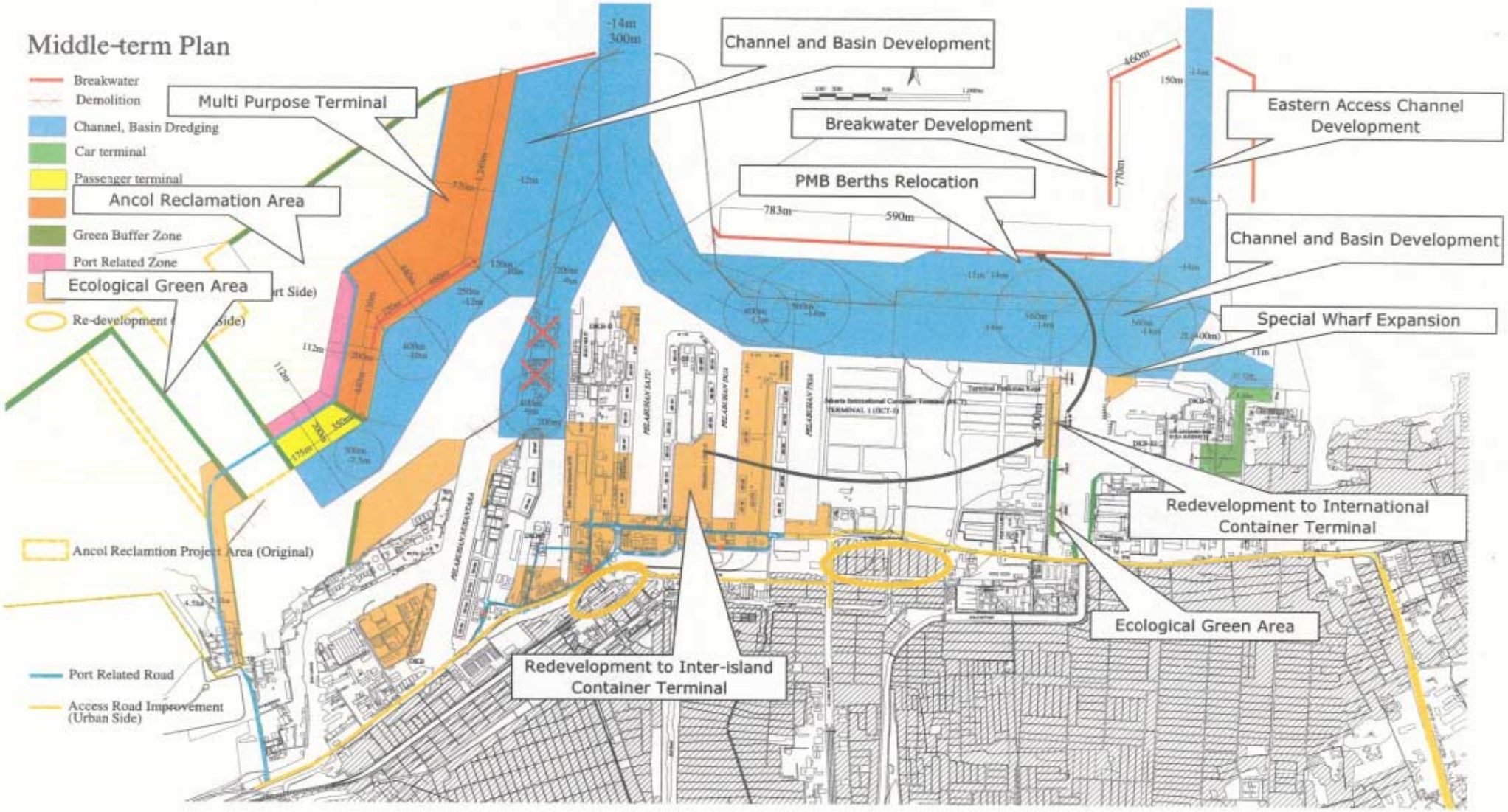
Figure 12-C-2 Phased Development Plan (Bojonegara)

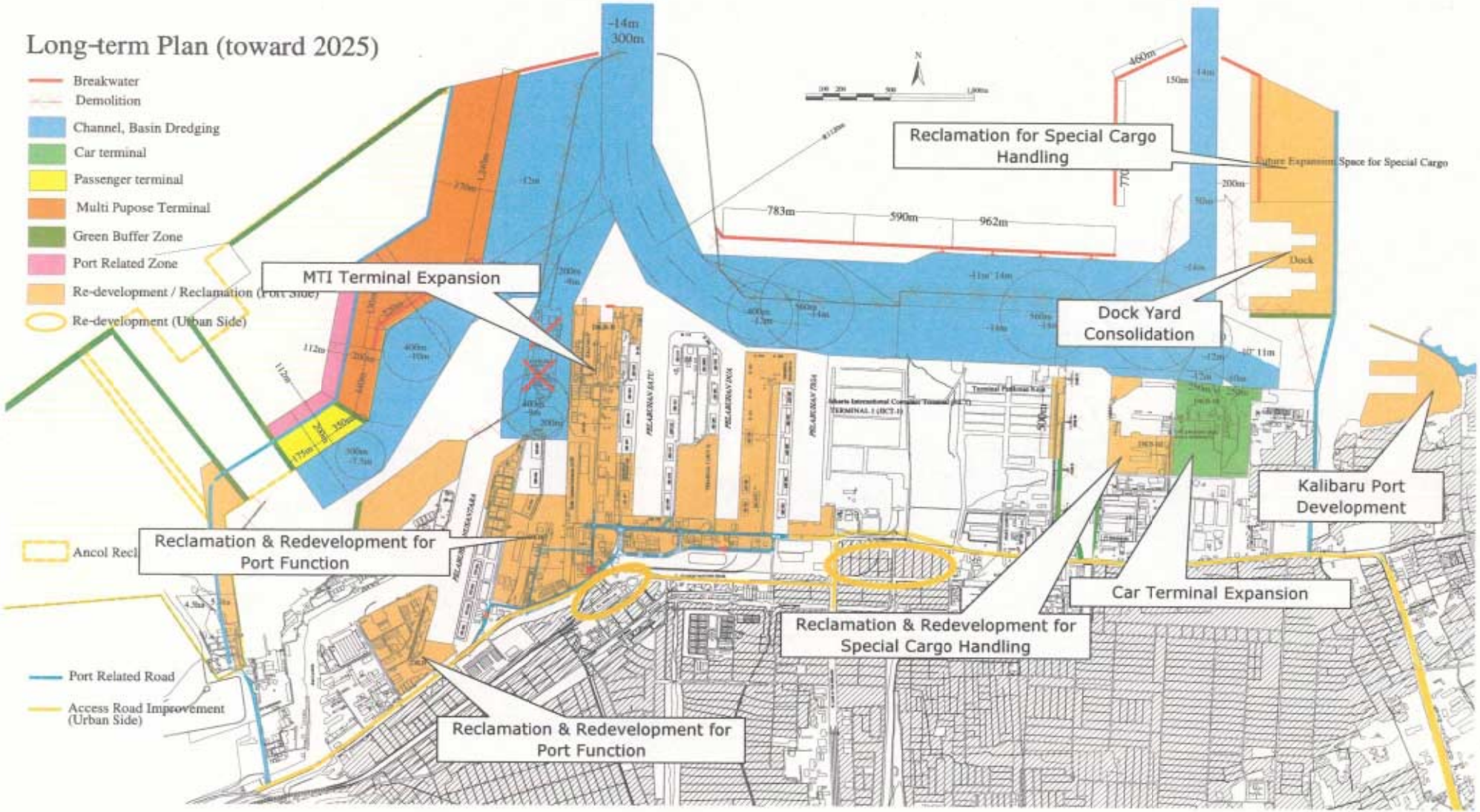

Urgent Plan (2006)
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Breawater Relocation
Access Channel Widening
Inner Channel Widening
Breawater Relocation
Reclamation & Yard Development
Car Terminal Developmant
Re-development / Reclamation (Port Side)
Reclamation & Wharf Development
Yard Development
Ancol Reclamtion Project Area (Original)
Port Related Road
Access Road Improvement (Urban Side)
Port Inner Road Improvement
JORR North Extention

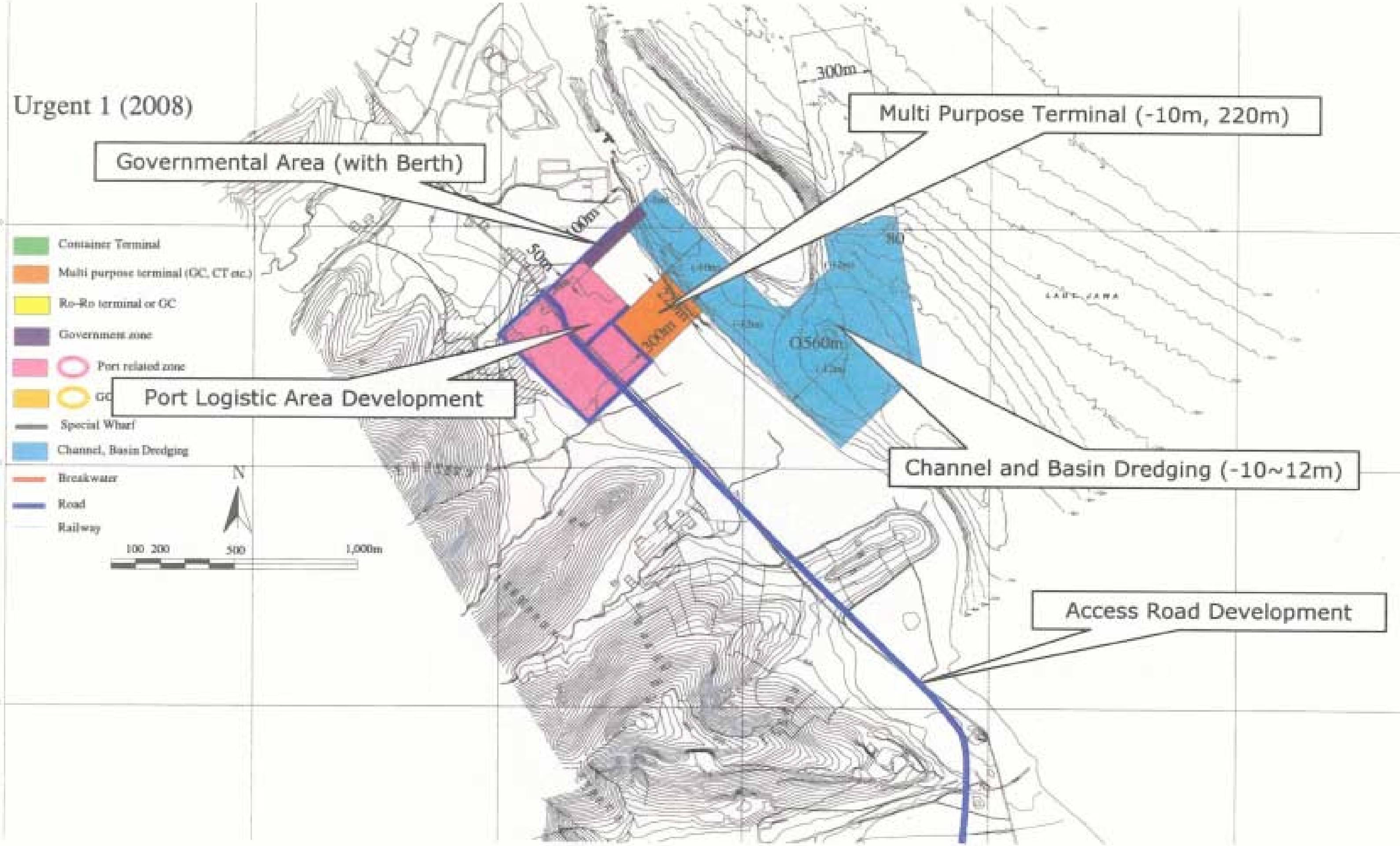

Urgent Plan (2008)
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Re-development / Reclamation (Port Side)
Ancol Reclamtion Project Area (Original)
Port Related Road
Access Road Improvement (Urban Side)
-14m
300m
Expanding Turning Basin
Breawater Relocation
Channel Widening
Redevelopment to Inter-island Container Terminal
Eastern Port Access Highway Development
78.3m
590m
200m
2L(400m)
N

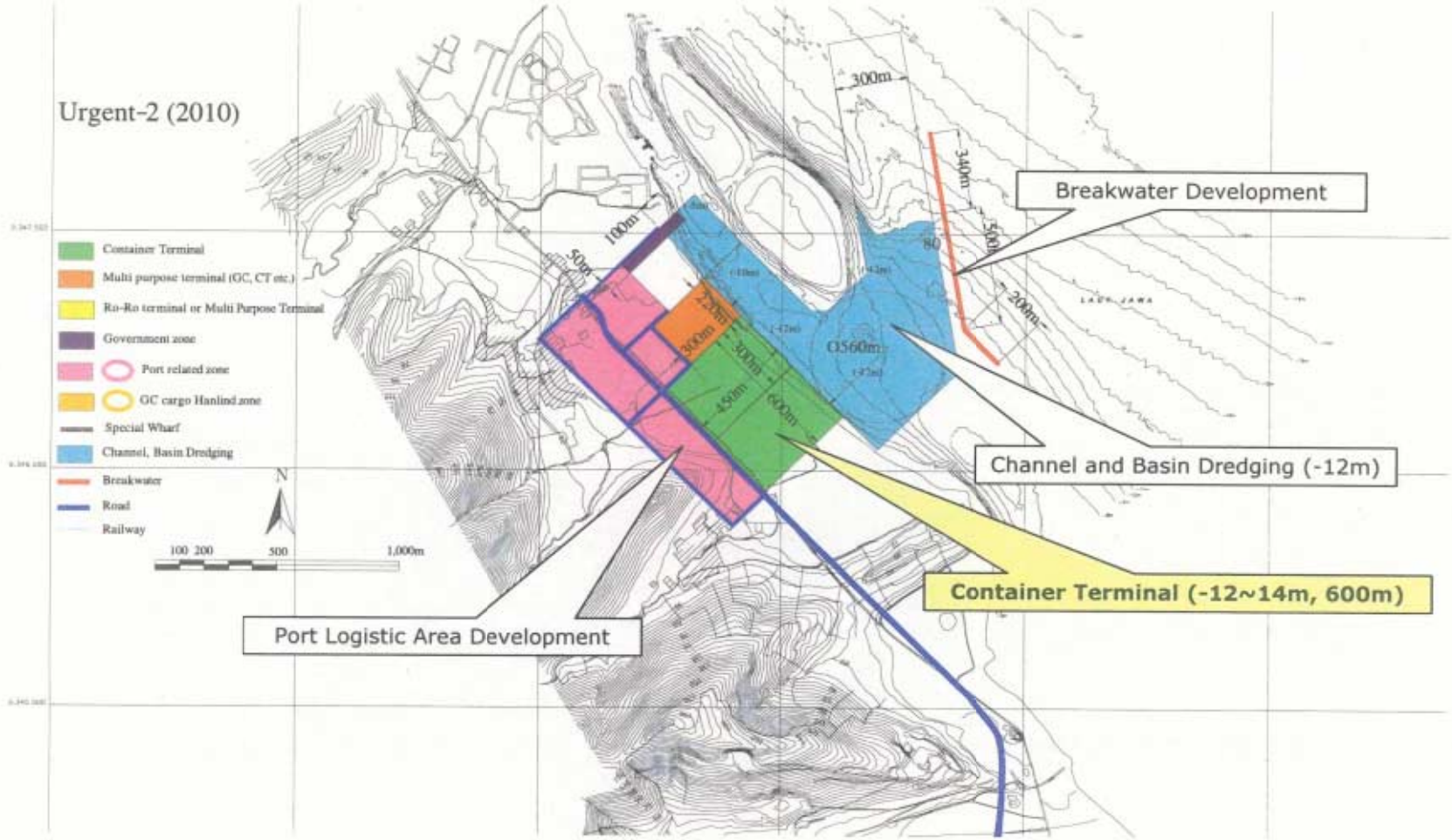

Urgent Plan (2010)
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Passenger terminal
Multi Pupose
Green Buffer Zone
Port Relate
Re-development / Reclamation (Por
Channel and Basin Development
Breakwater Development
Port Logistic Area
Breawater Relocation
Access Channel Widening
Multi Purpose Terminal
Ecological Green Area
Reclamation for Functional Relocation
Passenger Terminal
Ancol Reclamtion Project Area (Original)
Port Related Road
Acces Road to Ancol Area
Redevelopment to Bulk berth (CPO, Construction Material etc.)
Reclamation for Functional Relocation (Small Vessels)
783m
590m
962m


Short-term Plan (toward 2012)
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Passenger terminal
Multi Pupose Terminal
Green Buffer Zone
Port Related Zone
Re-development / Reclamation (Port Side)
Re-development (Urban Side)
Ancol Reclamtion Project Area (Original)
Port Related Road
Access Road Improvement (Urban Side)
Multi Purpose Terminal
Military Removal & Channel and Basin Development
Redevelopment to Inter-island Container Terminal
Yard Development
Ancol Reclamation Area
MTI Terminal Expansion
Redevelopment to Bulk Berth
Redevelopment to General Cargo Terminal
Redevelopment of Urban Area Road Improvement
Improvement of Western Port Access Road
Reclamation for Functional Relocation
Redevelopment of Urban Area (Station & Bus Terminal) with road improvement
783m
590m
962m

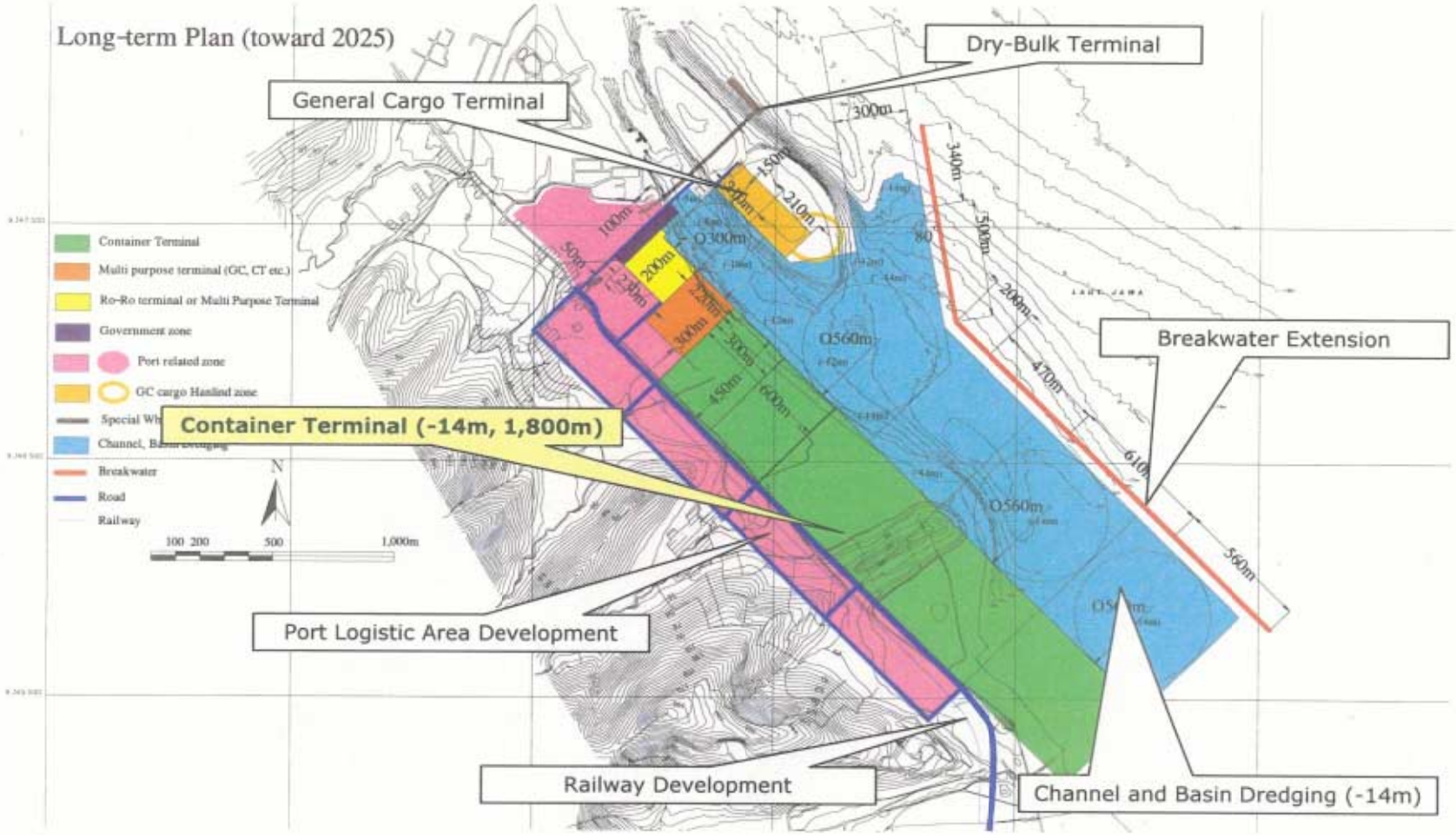

Middle-term Plan
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Passenger terminal
Green Buffer Zone
Port Related Zone
Re-development
Ancol Reclamtion Project Area (Original)
Port Related Road
Access Road Improvement (Urban Side)
Multi Purpose Terminal
Ancol Reclamation Area
Ecological Green Area
Channel and Basin Development
Breakwater Development
PMB Berths Relocation
Eastern Access Channel Development
Channel and Basin Development
Special Wharf Expansion
Redevelopment to International Container Terminal
Ecological Green Area
Redevelopment to Inter-island Container Terminal
-14m
300m
783m
590m
770m
460m
150m


Long-term Plan (toward 2025)
Breakwater
Demolition
Channel, Basin Dredging
Car terminal
Passenger terminal
Multi Pupose Terminal
Green Buffer Zone
Port Related Zone
Re-development / Reclamation (Port Side)
Re-development (Urban Side)
Ancol Recl
Port Related Road
Access Road Improvement (Urban Side)
MTI Terminal Expansion
Reclamation for Special Cargo Handling
Future Expansion Space for Special Cargo
Dock Yard Consolidation
Kalibaru Port Development
Car Terminal Expansion
Reclamation & Redevelopment for Port Function
Reclamation & Redevelopment for Special Cargo Handling
Reclamation & Redevelopment for Port Function
-14m
300m
783m
590m
962m
460m
150m
200m
Dock
N


Urgent 1 (2008)
Governmental Area (with Berth)
Multi Purpose Terminal (-10m, 220m)
Port Logistic Area Development
Channel and Basin Dredging (-10~12m)
Access Road Development
Container Terminal
Multi purpose terminal (GC, CT etc.)
Ro-Ro terminal or GC
Government zone
Port related zone
Special Wharf
Channel, Basin Dredging
Breakwater
Road
Railway
N
100 200 500 1,000m
300m
100m
50m
300m
560m


Urgent-2 (2010)
Container Terminal
Multi purpose terminal (GC, CT etc.)
Ro-Ro terminal or Multi Purpose Terminal
Government zone
Port related zone
GC cargo Hanlind zone
Special Wharf
Channel, Basin Dredging
Breakwater
Road
Railway
N
100 200 500 1,000m
300m
340m
500m
200m
100m
50m
220m
300m
300m
450m
600m
560m
80
Breakwater Development
Channel and Basin Dredging (-12m)
Container Terminal (-12~14m, 600m)
Port Logistic Area Development


Short-term Plan (toward 2012)
Ro-Ro Terminal (-8m, 200m)
340m
500m
200m
300m
80
300m
300m
300m
450m
600m
100m
100m
100m
50m
Container Terminal
Multi purpose terminal (GC, CT etc.)
Ro-Ro terminal or Multi Purpose Terminal
Government zone
Port related zone
GC cargo Hauling zone
Channel, Basin Dredging
Breakwater
Road
N
1,000m
500
100 200


Long-term Plan (toward 2025)
General Cargo Terminal
Dry-Bulk Terminal
Breakwater Extension
Container Terminal (-14m, 1,800m)
Port Logistic Area Development
Railway Development
Channel and Basin Dredging (-14m)
Container Terminal
Multi purpose terminal (GC, CT etc.)
Ro-Ro terminal or Multi Purpose Terminal
Government zone
Port related zone
GC cargo Hanlind zone
Breakwater
Road
Railway
N
100 200 500 1,000m
300m
340m
500m
470m
610m
560m
150m
210m
100m
50m
200m
230m
300m
450m
600m
Q300m
Q560m

12-D. SELECTION OF PRIORITY PROJECTS FOR FEASIBILITY STUDY

587. Based on the evaluation of the projects in 12-A as well as phased development concept, the study team selects the following projects for feasibility study putting priority on urgency and viability of the project. (✓ means the selected component)

Tanjung Priok

Project Component	FS Project	Proposed Year of Operation	Remarks
Widening the Main Channel and Turing Basin	✓	2006~	Priority project in order to increase the port capacity. Implemented by phased construction
Widening the channel and basin to the Nusantara area including MTI	–	2012	Need further examination through coordination among related parties such as military
Car Dedicated Terminal Development	✓	2006	Priority project implemented immediately in order to accommodate the urgent need of automobile export/import in AFTA
Inter-island Container Handling Improvement	✓ (Partly)	2010~	Pier III reorganization is selected. (MTI expansion is pending because of the necessity of coordination with the related entities.)
Bulk Cargo Handling Improvement	–	2010~	Need further examination through coordination among related parties
Passenger Terminal Relocation	✓	2010	A new passenger terminal is developed in Ancol development area
Inland Yard Development	–	2006~	Inland yard development needs further examination.
Land-use re-development in the urban area adjacent to the port	–	2010~	Requires further examination through coordination among related parties
Ancol Development (New Passenger Terminal, Multi Purpose Terminal and Access Road)	✓	2010~	Priority project in order to re-develop the current complicated land use.
Port Inner Road Improvement	✓	2006~	Should be implemented accompanied with the increase of port capacity.
Eastern Port Access Highway Development Linking with JORR	–	2008	Should be examined in the context of urban road network development. Responsible body will come from within the road sector.

Bojonegara

Project Component	FS Project	Proposed Year of Operation	Remarks
Container Terminal Development	✓	2010~	Should be operated by 2010. Some additional equipment will be deployed in 2011.
Multi Purpose Terminal Development	✓	2008	Should be operated by 2008
Ro-Ro Terminal Development	–	2012	Requires further examination
Breakwater, Channel and Basin Development	✓	2008~	Implemented by phased construction
Port Access Road Development	–	2008	Should be completed by 2008. Responsible body will come from within the road sector.

✓ : selected component

CHAPTER-13. MANAGERIAL AND OPERATIONAL IMPROVEMENT

13-A. ADMINISTRATIVE STATUS OF THE FOCUS PORTS

13-A-1 National Port System

588. Recent Decree of the Minister of Communications has been issued regarding national port system. It defines and classifies national ports as shown in Table 13-A-1

Table 13-A-1 Concept of Port Classification

	Public Port	Special Port
Sea Port	▪ International Hub Port (Primary Trunk Port) ▪ International Port (Secondary Trunk Port) ▪ National Port (Tertiary Trunk Port) ▪ Regional Port (Primary Feeder Port) ▪ Local Port (Secondary Feeder Port)	▪ National /International Special Port ▪ Regional Special Port ▪ Local Special Port
Lake & River Port	▪ Serving Inter Provincial Transport ▪ Serving Inter Municipality Transport within the Province ▪ Serving Transport within the Municipality	
Ferry Port	▪ Trans Province /Inter State Ferry Port ▪ Trans Municipality Ferry Port ▪ Trans Ferry Port within Municipality	

589. In this decree, definition of national port system and obligation of the Minister as to carry out the promotion of port affairs encompassing the aspects of regulation, supervision and control over the activities of development, utilization and improvement of port to realize the system of national port affairs.

590. It states that the activities of regulation shall include the activities of policy making in the field of port affairs. The activities of supervision shall include a. monitoring and evaluation over the activities of port construction, operations and development; and b. corrective actions against the performance of the activities of port construction, operations and development. The activities of control shall include a. issue of directions and instructions in performing the port construction, operations and development; and b. giving guidance and information to the public on the rights and obligations of the community of users of services of port affairs.

591. It also states the objectives of above system as; it shall be a basis in the construction, utilization, development and operation plans of port all over Indonesia to build a port infrastructure network integratedly, in accord and harmoniously in order to compete and not to mutually disturb which is dynamic in nature; to create the efficiency of sea transportation nationally; to realize the provisions of services of port affairs according to rate of demand; and to realize the reliable and highly capable organization of port in the framework of supporting the national and regional development.

592. However, it does not state any criteria in the framework of supporting the national and regional development. This may be caused by the lack of inter-coordination between national/regional development policy plan and port development plan or may be lack of concrete physical national development plan to be adjusted with port development policy.

593. It also does not state in anywhere about the basic rules of administration and management of port such as managerial scheme for ports in the hand of central government and for the ports in the hand of local government about aspects other than delegation of management of local port and regional port in chapter VI of the said decree.

594. In the administration of the port affairs, funding scheme for the port development and financial management rule including port pricing and investment recovery is one of the most important issues as well as regal status of port management body.

595. There is no clear statement about port management body of the national ports in the said decree. It may be understood from other decree on IPCs that national ports shall be managed under corporate articles of IPCs as status quo and hence it may be understood that all the rights and obligations on ports of Tanjung Priok and Bojonegara are under IPCII including passenger terminal.

13-A-2 Status of the Focus Ports in the National Port Policy

596. Tanjung Priok/Bojonegara should be given the highest status in the national port development policy, not only in terms of status/hierarchy in the Decree of National Port System, i.e., International Hub Port securing transshipment of containers between domestic lines and international lines, but also in terms of national development since Tanjung Priok/Bojonegara are important to the nation's industrial and economic development.

597. International Hub Port is determined by paying attention to;

- the role as a international hub port serving the transshipment of national and international containers with the world class sea transportation service scale;
- the role as a mother port serving the national and international container transport of 2,500,000TEUs/year, or another equivalent transport.
- the role as a national and international container transport transshipment port with a service ranging from 3,000,000-3,500,000TEUs/year, or another equivalent transport;
- its location which is close to the international shipping lane at about 500miles;
- the minimum depth of port of –12mLWS;
- the ownership of container terminal/dock with a minimum length of 350m, 4cranes and a container yard of 15ha in extent;
- the distance from another hub international port of 500-1,000miles.

598. Considering the current performance on container cargo handling both in Tanjung Priok and Tanjung Perak, there is/will be no international container transshipment with more than 3,000,000TEUs/year usually performed by the international container hub port such as Singapore, Hong Kong and Colombo. Therefore the International Hub Port in the said decree should be regarded as hub port functioning transshipment of containers between domestic lines and international lines.

599. Apart from the current decree on system of national port affairs, It should be noted that investment priority criteria on port as well as criteria on the intense of involvement of national government in the administration and management of port in coordination with related national organizations such as custom offices, quarantine offices and responsible organizations for commerce and industry are more important to achieve the objectives mentioned in the said decree.

600. In the development of Tanjung Priok and Bojonegara, it is important to coordinate the industrial development of Central and West Java with the port development both from the view points of promoting foreign investment on the industrial development and easing the serious traffic jams in Jakarta including port.

601. Therefore the focus port of Tanjung Priok/Bojonegara should be given highest status in the national port development policy, not only in the meaning of status/hierarchy in the said decree but also in the meaning of national development considering the roles of Tg. Priok/Bojonegara which should play in the field of promotion of industrial development and economic sustainability of the nation.

602. The intensive involvement of national government, especially of Ministry of Communication, Ministry of Industry and Ministry of Finance (Customs Office) is a must to promote the development of the port.

13-B. MANAGEMENT AND OPERATION SCHEME FOR INTERNATIONAL CONTAINER TERMINAL

13-B-1 Recent Trends of Container Terminal Operation

1) World-wide Trend

603. In the past twenty years, R&D efforts for automation and labor-saving in the field of container terminal operation have been remarkable, regardless terminal location, whether it is in advanced countries or advancing countries. Within a few years from now, we are to be surprised at the changes of both hardware and software of container terminals. As a matter of fact, China is aggressively promoting R&D activities for rationalization of terminal hardware to strengthen competing power of terminal.

604. Another example of the trend is a big dispute between ILWU (International Longshoremen and Warehouse Union) and PMA (Pacific Maritime Association : shipping lines and terminal operators) in November/December of last year which will be recorded in history. The main subject of dispute was an introduction of automation and labor-saving scheme and devices into terminal operation. The all US west coast ports from Seattle to San Diego were paralyzed for more than five weeks and finally caused Presidential intervention for 80 days cooling off period by Taft-Hartley Act. The dispute was finalized when a mutual agreement was reached to the effect that Union agree to PMA 's long term plan to introduce automation and labor–saving scheme on condition that PMA will pay substantial compensation to Union. The US West coast dock-workers declared on January 23, overwhelming support for a six-year contract with PMA.

605. The modernization of container terminal operation towards automation and labor-saving has been a strong wish for many years by all member companies of PMA. Now that an understanding is reached, many terminal operators in the west coast will start competing in automation and labor-saving program. In Europe, automation and labor–saving efforts have a longer history than in the US. In Japan, a heated competition for terminal automation was once

observed in 1980s but subdued in 1990s. But sooner or later , the trend will spread to every corner of container terminal industry

2) Contents of R&D of Automation and Labor-saving Devices

606. R&D efforts are observed in a various aspects of container terminal operation. The following are the topics of R&D worth noticing:

a) Gantry Cranes

607. Improvement of gantry cranes is remarkable. It is in the final course of full automation of operation. Trolley speed, hoist speed, sway-stop devices, pattern recognition of container, container spotting speed, all these abilities of new cranes are more than surprising. Crane producers in the world are sending their newer products to the market every year. As results, a load to a crane operator for daily operation has dramatically reduced and it will not be a long time before number of gantry crane operator per shift per crane will become one in labor agreement with union. Currently, in most container terminals, except PSA, an agreed number of crane operator per shift per crane is two.

608. The meaning of the number of crane operator is not negligible. Nowadays, competition between terminal operators are fought through the number of handling containers per berth. Many cranes are deployed for one vessel operation. Thus a number of per shift per crane operator is crucial. For example, to handle 1,000 containers in 10 hours is a minimum requirement for world standard terminal. Assuming three gantry cranes are deployed for 10 hours (one shift and three hours), the number of crane operators needed are 12 men in case two operators are agreed with union, while 6 men in case of one operator.

b) RTG and other yard operation equipment

609. Automation of RTG is remarkable. regardless it is tire-mounted or rail mounted, an automated transfer from one location to another is now a reality. All crane manufacturers are at the final stage in realizing an automated operation of vertical movement. In some of the new terminal such as PSA and ECT, semi-automated RTG have been introduced. Divers onboard such RTG are not needed to drive for transferring, they just hoist/hang-down containers when RTG arrive at the computer designated spot. Again, the load to RTG operator is remarkably reduced.

610. On the other hand, study for automation or labor-saving of yard handling machine other than RTG , such as straddle carrier, top lifter, side loader and folk lift has not been advanced. Main reason for the poor result is that those machines are auxiliary and benefit of automation and labor-saving is limited. These handling equipment is used mainly for yard marshalling and has a possibility of becoming a week part of container terminal in the near future.

c) Automation of gates

611. Automated reading device of container number has been a long hoped dream of shipping lines, as well as terminal operators and all concerned companies in the container transportation industry. Various kinds of such devices have been introduced in many terminals and now used in daily operation. At almost all of advanced terminals, it is difficult to find gates of conventional type. They are not needed anymore and gone. Checking bridge is still there in some cases, but it will also fading away because video camera eyes are getting more keen than human eyes. Weighing scale is also automated thus all necessary information can be collected without man-power. In the very near future, only some security guards will be needed to watch

automated devices to function. Gate function will be incorporated in administration office function. The impact of this change will not be small.

d) Elimination of Tally-man, Checker

612. Tallying and container (cargo) checking are remains of conventional ship days. They are just like boiler men onboard electric locomotives. As a matter of fact, it is almost difficult to find out any damage on container from deck or any place under gantry crane, when containers are traversing in fairly fast speed. It is also non-sense to count numbers of containers, because a yard-operation-computer knows every detail of loading and unloading containers and when miss-operation, it will dispatch an alarm to all concerned without delay. If their functions are not re-defined and given new responsibility, there will be no need for terminal operator to include them in a manning scale of terminal operation.

613. At present, a terminal operation contract between an operator and a user generally has the operator's responsibility clause which contains tallying and checking as its responsibility. The responsibility of proving defects of operator, however, lies on user, thus, the stipulation of the part is meaningless and not used in usual cases. Many shipping lines are taking defensive measures as is in a self-insurance system. There is no cargo tracer nor answer back system for a tracer, a new cargo claim rules are being made among shipping world to meet the change in the containerization.

e) Automation of yard tractor with chassis

614. Automation of yard tractor is not independent from automation of gantry cranes or RTGs. They are studied as one set of automation. Sea-side or ship-side terminal operation consists of the following basic part of operation for discharging:

- Discharging from ship (by gantry crane)
- Putting container on chassis (by gantry crane)
- Transferring to a designated point in yard (by yard tractor)
- Hoisting container from chassis and hang-down container (RTG) (for loading operation, the sequence is contrary.)

615. In the above operation, it is no use just a gantry or RTG are automated, a circle movement of yard tractor with chassis is needed to be automated as a whole. Because all necessary information is controlled by a yard computer, the three elements, namely gantry crane, RTG and yard chassis are its slaves and need to follow a single order. In this sense, it is more difficult to automate each three element separately. Container terminal could be regarded as an automated warehouse and will be improved quickly towards such direction. In ECT of Rotterdam and PSA, R&G efforts are still going on and the world won't be surprised if more automated container emerge.

f) Centralization of Monitoring of Temperature Controlled Containers

616. In many current container terminals, monitoring operation is being made open field in conventional manual system. Because a number of containers of this type is quickly increasing, this manual monitoring is getting harder and becoming burden to operation staff. Rationalization of monitoring is quickly developing and in many terminals, centralization of monitoring are being introduced. As results, a number of engineers for the job has drastically decreased.

3) Evaluation of Investment for Automation and Labor-saving

617. It is widely observed and received that the trend of automation and labor-saving is a non resistible in container terminal industry. Next question is whether it pays and why. Without having a clear answer to these questions, it will be dangerous to plan a container terminal following today' common sense of terminal planning especially setting up a manning scale for a new terminal.

618. Generally, an investment to automation or labor saving plan is evaluated by a number of labors reduced. As a standard in Japanese industry field, a saving of one labor in any process of production is said to be around Yen 50 million per year. This might be smaller than an actual savings because there are some opinion the figure should be more. Container terminal like a petrochemical plant is an equipment control factory. Basically it is very simple and does not need any complicated operation. It therefore fits an automated operation and once introduced, its economical merit is big. In the industry, it is said the merit of saving one labor justify Yen 100 million per year. Who calculate the amount still needs debate, but it is understandable that a heavy competition is expected among many terminals and only and final key for survival is a cost of operation.

619. Investment in machine equipment has a tendency that an initial cost is smaller than maintenance cost. The same tendency is more prominent in investment in human resources. Investment in facilities are repaid for a certain period, say 8, 10 years according to repayment period rules and do not remain in books for a long time exceeding the regal period. On the other hand, office clerks or labors, once employed, they are to remain 10, 20 years or longer. It is difficult, however, to calculate the risk of this kind, but it must be bare in mind when new project is planned. It is advisable to count minimum Yen 100million of economical effect when deciding investment amount for container terminal automation or labor saving system.

13-B-2 Managerial and Operational Improvement for JICT & Koja Container Terminal

620. Containers are currently handled at three different terminals by three different operators, JICT, TPK Koja and conventional terminal operators including MTI. Container yards are located in and out the port because of the scarce yard space in the terminals. Hence, inefficient movement of containers and vessels together with troublesome custom clearance procedure cause complaints by the users.

621. JICT is operated under the concession scheme by the Joint stock company formed by IPCII and private companies and Koja is operated under joint operation system of IPCII and the private companies while container handling at the conventional terminal is operated by private companies including PT. MTI subsidized company of IPCII.

622. Terminal prices are fixed at higher level compared with other terminals by IPCII even though each terminal has a different operator and different productivity levels. Depending on the organization structure and assets owned by these different operators, operation cost may be quite different by operator. Price should be set in a competitive manner according to the operational skill and cost.

623. These three terminals are not linked systematically as to information and data interchange not only for the operation but also for customs clearance. Hence inefficient movement of containers seems to occur among different terminals.

624. The followings are some suggestions for managerial and operational improvement for JICT & Koja container terminal.

1) Overcoming Excessive Manning Scale

a) JICT

625. JICT Employees : 1,113 workers including 51 senior managers/managers (as of the end of November 2002)

626. All laborers are guaranteed employees by the concession agreement between JICT and PC II, and also by the contract between JICT and the labor union. About 10 employees are retiring every year in line with the retirement stipulations agreed upon between the company and the union. JICT recruited about 40 new employees this March for the first time since the privatization of the terminal in 1999. The above figure is the latest as of the end October 2002. Approximately 70 % (780 persons) of the 1,113 employees are working in operation. The number of workers per shift and per berth can be simply calculated as follows :

- 780 men ÷ 3 shifts = 260 workers per shift
- 260 men ÷ 7 berths □ 37 workers per berth
- Non permanent (extra) Employees : about 300 men

627. In addition to JICT employed laborers, there is an extra labor force totaling about 300 persons to cope with the fluctuation in container volumes. On average, 30 men are temporarily employed each day for one shift and paid about RP 25,000 to 30,000 per head. Extra laborers are mainly truck drivers and yard/on board laborers. It is worth noting that these extra laborers are doing the same jobs as the permanent laborers. At other ports in the world, extra laborers are generally unskilled and deployed for simple manual works. The above calculated figure of 37 men per berth, therefore, needs to be amended to around 45 to 50 men per berth according to the terminal operational condition. Assuming that an average of two gantries are deployed to handle a standard size container ship, the number of laborers per gantry is around 23 to 25.

628. These extra workers are hired through an agent called " Contract Co-operate ", PT. Koperagi Pegawai Maritim (KOPEMAR) at an order from each department head.

b) Koja

629. Koja Employees: 512 men including 1 General Manager, 4 Deputy GM, 14 Managers Total 19 Management. Non Management 493 men (as of the end of November, 2002)

630. Under the same assumption with JICT, Koja's per berth manning scale is calculated as follows:

- 493 men x 70 % = 345 men
- 345 men ÷ 3 shifts □ 115 men per shift
- 115 men ÷ 2 berths □ 58 men per berth

631. For Koja, it is not so needed as JICT to hire an extra labor force. Assuming that an average of two gantries are assigned to handle a standard size container vessel, the number of labors per shift per crane is around 29 to 30.

c) Comparison with World Standard

632. The table below shows some manning scales of one standard gang per crane in Tokyo, Yokohama, Hong Kong and Singapore. It is not easy to compare manning scale of different ports but it is possible to grasp prevailing tendencies.

Table 13-B-1 Manning Scale of at Selected ports (per shift per crane)

	Tokyo (K)	Tokyo (MOL)	Yokohama (K)	Hong Kong (CSX)	Singapore
Gantry	2 Drivers	2 Drivers	2 Drivers	1.50 Driver	1 Driver
RTGs	1.25 Drivers	1.30 Drivers	1.30 Drivers	1.30 Drivers	1.30 Drivers
Tractor	3 Drivers	3 Drivers	3 Drivers	3 Drivers	3 Drivers
Lashing	6-8 men	6-8 men	6-8 men	6-8 men	5-7 men
Boss	1 man	1 man	1 man	1	-
Total	around 15 men	around 16 men	around 16 men	around 15 men	around 13 men

Source: JICA Study Team

633. World trends can be summarized as follows:

- Gantry Crane: 2 drivers/1 unit
- RTG: 1.5 RTG/1 Gantry
- Tractor Head:3 units (3 drivers per Gantry) is standard, but 4-5 units are deployed when needed to expedite operation. An increase in operation efficiency of about 15 % is expected by adding 2 units, 10 % by 1 unit.
- Lasher:6 men for a smaller ship (2 Gantries can not be fully deployed.)
- 8 men for a larger ship (2 or more Gantries can be deployed.)

634. In some advanced ports, R&D on automated operation of container equipment such as gantry crane, RTG is being promoted. New innovations will eventually further decrease the manning scale.

635. For both JICT and Koja, the standard size of one gang per gantry crane per shift is almost double that of the world standard. The difference gets larger as the number of gantry cranes deployed increases.

	World Standard	JICT/Koja
One Gantry:	15 men	30 men
Two Gantries:	30 men	60 men
Three Gantries:	45 men	90 men

636. As long as labor costs in Indonesia are far less than the international standard, this situation might be tolerable. But from the long term managerial view point, it is important to rationalize the present blistered manning scale.

2) Tariff Reduction

637. Under the severe competition, container terminals in the same region may drastically reduce container handling charges to gain an advantage. For example, Tanjun Pelepas (PTP) enjoyed a surge in its container volume when it cut its handling charge by 30 %.

638. JICT and Koja are currently enjoying what can be called a monopoly in the Jakarta metropolitan region. Under present terminal market situation, it is hard for JICT/Koja to find any reason to reduce terminal tariff rates. However, it is not merely a matter of the west Java economy, but of the whole country. Indonesia is facing fierce competition in attracting foreign investors in manufacturing industry such as automobiles and motor cycles with countries such as Vietnam, the Philippines and Thailand.

639. High terminal charge structure at JICT/Koja is an obstacle to trade development of Indonesia as shippers and consignees are unable to increase from more active import/export activities. Table 13-B-2 shows terminal charge level in some Asian ports including JICT/Koja.

Table 13-B-2 Terminal Charge Comparison (rate for 40')

Port	Tokyo	Kaohsiung	Busan	Hongkong	Singapore	L.Chabang	Haiphon	JICT
Kind of Terminal	Dedicated	Dedicated	Commer-sial	Commer-sial	Commer-sial	Semi-Dedicated	Commer-cial	Comer-cial
Terminal Charge $	208	79	98	401	107	130	80	153*
Japanese ¥	26,000	9,900	12,300	50,200	13,400	16,250	10,000	19,130
Purchasing Power Parity	1.0 ($208)	0.9 (88)	0.9 (109)	1.1 (364)	1.0 (107)	0.6 (217)	0.5 (160)	0.4 (383)

Source: JICA Study Team, Japan Maritime Research Institute (JAMRI)
Remarks: * JICT tariff plus 10 % for various additional charges. Purchasing Power Parity is calculated using parities for salary of office workers, meal charges and taxi fare.

640. According to the Table, JICT charge for a 40 footer is nominally the third highest among eight ports, and the highest after the purchasing power parity calculation. Every possible means should be taken to reduce JICT/Koja tariff strengthen the competitive power in the South EAST Asian region.

641. To realize a tariff reduction, priority should be given to reducing costs. Current JICT and Koja seem to be overstaffed in comparison with other terminals with similar throughput. This situation was caused by the transition agreement involving Pelindo-II employees at the establishment of JICT and Koja. To avoid a possible labor dispute and loss of jobs for the former Pelindo-II employees, Pelindo-II might have been forced to take such measures of secondment. As result, all laborers and staffs are guaranteed employees and it is said to be legally difficult to fire them. For reference, about 10 employees are retiring every year in line with the retirement clause agreed between the company and the union. JICT recruited about 40 new staffs in March, 2002 for the first time since the privatization of the terminal in 1999.

3) Reducing Redundant Labor

642. The purpose of privatization is to reduce the government's financial burden and to increase productivity through the introduction of market-oriented rational management. In any country, privatization of a state owned company is always accompanied with issues on overstaffing.

643. In the privatization of Japanese National Railway which had more than 200,000 employees, Japanese Government took measures to absorb more than 20,000 redundant laborers in two ways: early voluntary retirement with retirement bonus and re-employment by other government organizations and agencies.

644. It will then be necessary to adopt a screening process to identify unproductive or unqualified laborers.

4) Improvement of Terminal Services

645. Interviews revealed a high level of dissatisfaction with JICT and Koja, among shipping lines and shippers/consignees. Main points raised by shipping lines and shippers/consignees are listed below.

Item	Dissatisfied Party	Complaint
Equipment maintenance	Shipping lines/Agents	Due to mal-function of gantry crane, schedule is delayed
Gantry production	Shipping lines/Agents	Low production of GC Increases the amount of time a ship is at port
Pilferage in yard	Shipping lines/agents Shippers/Consignees	Rampant pilferage occurs
High charge level	Shipping lines/Agents Shippers/Consignees	Compared with other major terminals, too high and raised one-sidedly
Ship's waiting time	Shipping lines/Agents	More than two hours waiting not rare
Mis-operation	Shipping lines/Agents	Due to computer error, containers were loaded and unloaded.

a) Maintenance:

646. Gantry cranes, especially super-Panamax often break down and ships have to sail out leaving dedicated containers which are sent to Singapore to connect the same ship or other mother ship to the final destination. Users of JICT request that more efforts in the area of preventive maintenance be made.

b) Pilferage in yard

647. Containers in the custody of a terminal operator are believed safe. This is commonly understood in the world container terminal industry. Unfortunately, containers in JICT yard are not safe. Seals are often cut and goods inside containers are stolen. In many cases, a padlock is used after such pilferage. And this rampant theft has become notorious throughout the world. To defend their own cargo, shipping lines are hiring their own security guards by their account. This is quite rare in the industry. Judging from the fact that only high price cargoes are stolen, thieves must be receiving inside information.

c) High charge level

648. Actual charge level quoted in US Dollar is felt to be the highest in the world. From the long term view point, it is not wise to uphold this high charge level. Instead, the level should be lowered to a reasonable level to encourage international and domestic trade in containers. Both JICT and Koja could reduce handling charges by rationalizing main cost items.

d) Ships' waiting time

649. Although shipping lines know the window system introduced by JICT and Koja, they complain about long waiting times. Some ships are kept waiting more than two hours outside the terminals.

e) Mis-operation

650. Computer system for the yard operation is still at the infantry stage. In the summer of 2002, error input resulted in mis-operation. Many containers were loaded according to the mis-instruction and had to be unloaded again just before the ship's sailing.

651. With the exception of ship's waiting time, all of the above items are rooted in same problem: namely, lack of proper staff training. The rest are caused by the software and an excess

labor. It is understood through interviews that JICT has dispatched about 250 employees to Hong Kong for training. To this point, the input of this training has yet to be seen in every day operation. The training curriculum should be reviewed but more important than that is adopting an effective screening process for qualified laborers. It is proposed that a dedicated in-house committee be formed to decide the optimum manning scale. To achieve this, an appropriate set of guidelines is also required.

5) OB System

652. In both JICT and KOJA, the average dwelling time is comparatively short, i.e., 4.6 days and 5.2 days respectively. This benchmark itself shows that terminal operation condition is not bad. However, it must be noted that the seemingly healthy condition of the terminals is supported by the so called OB system. In this system, the terminal operators under an agreement among concerned parties, are allowed to ask importers to shift import containers sitting in the yard beyond 10 days to an inland depot (usually called a " Dry Port ") which is operated by a private company and licensed by customs.

653. By an agreement among the concerned organizations (Customs, Terminal Operators, Dry Port Operators), the consignees are to be charged by Dry Port Operators RP 400,000 per TEU (although the actual charge is said to be RP 1,500,000 per TEU). Consignees are heavily complaining about this un-transparent charge level and some of them are asking JICT/KOJA to pay back the balance of RP 1,500,000 and RP 400,000 to them. To this request from consignees, JICT is reportedly responding by offering 42 hectare for long staying containers. If the in-yard space is dedicated to the long sitting containers exceeding 10 days and actually used, Dry Port Operators will lose their business.

654. OB system is still being discussed among the concerned organizations and companies. The subject is very closely connected to container handling capacity at JICT and KOJA and it is worth watching closely. From the view point of a terminal cost comparison, the Dry Port charge is not negligible. RP 1,500,000 is about US$ 160 per TEU and 240 per 40'. If this amount is added to the normal terminal charge currently being quoted by JICT and Koja, the total amount is possible to reach US$ 393 (US$ 153 plus 240) which is nearly the same as the rate at Hong Kong.

655. OB System, if it is applied, would result in substantial damage to consignees of import containers. Normally, imported containers are delivered through a gate of a container terminal once only. In the OB System, however, containers are shifted from JICT to a bonded depot and then are delivered to the final destination. This operation flow means each container is handled two times for delivery, once by JICT, and for the second time by a Dry Port operator. This two bound system is meaningless and can be avoided by a rationalization of traffic and customs' documentation.

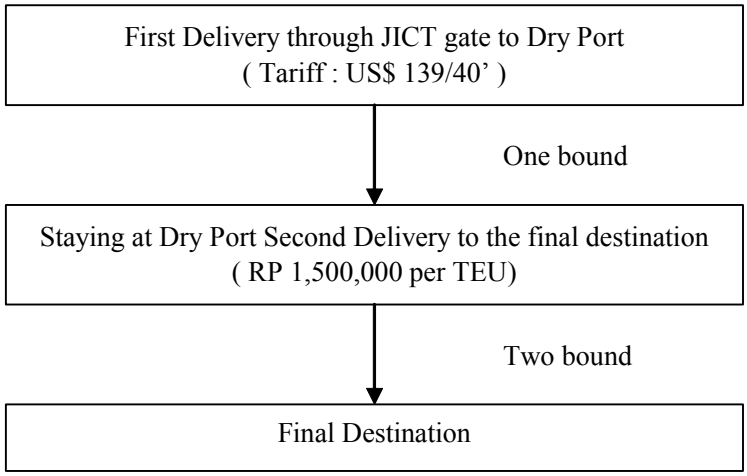


Figure 13-B-1 OB System Flowchart

13-C. MANAGERIAL AND OPERATIONAL IMPROVEMENT FOR CONVENTIONAL TERMINAL IN TANJUNG PRIOK

656. As to the conventional cargo handling, 14 operators are operating exclusively with designated berths. Berth productivity in terms of throughput per unit length of quaywall and berth occupancy rate seems extremely high while waiting time of vessels is very long. These figure seems to show the inefficiency of terminal operation from ship operators viewpoint and incurs higher cost to users.

657. In order to manage and operate the conventional terminal more efficiently, a future management and operation system is examined as follows within the framework of the Master Plan.

658. Generally, conventional terminal should be operated by smaller numbers of operators who has sufficient skilled personnel and equipment to provide good service to port users. However, the conventional terminal operation at Tanjung Priok port is conducted by PT. MTI, 14 terminal operators and other stevedoring companies without such overall control as shown in Figure 13-C-1.

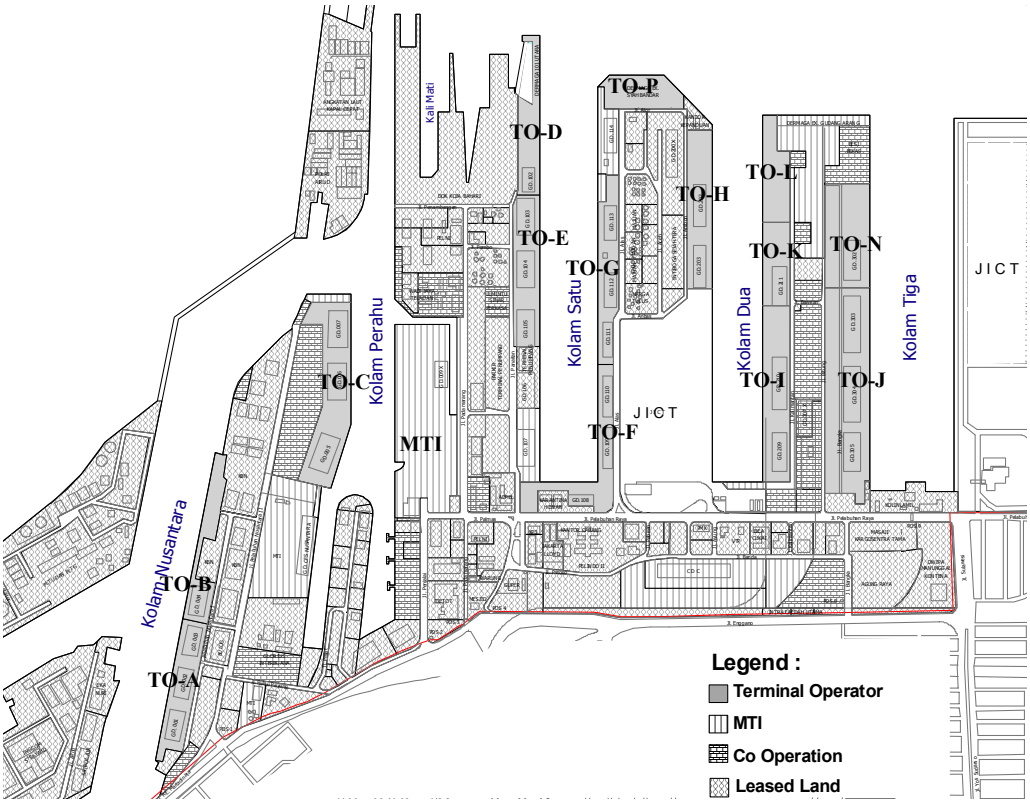


Figure 13-C-1 Utilization of Land by Contract at Conventional Terminal Area

659. From the theoretical point of view, excessive number of operators decreases the scale merit in terms of number of available berths for common carriers, causing unnecessary waiting for carriers.

660. To pursue the scale of merit, operators should be grouped into smaller numbers to operate a reasonable number of berths jointly. Therefore, reformation of the current operation structure is required.

661. Reformation of the terminal operators should be carried out paying attention to the following points.

- The new terminal operators will be culled from PT. MTI and 14 terminal operators including other stevedoring companies by the open-tender of IPCII. And at the same time, it is necessary for high-ranking and competent personnel to be appointed from the new terminal operators to organize a terminal operators' cooperative society.
- The new terminal operators should have incentives for efficient management with a system in which the more efficient management is done, i.e., cost reduction, business improvement and so on, the more profits increase.

662. Table 13-C-1 shows the evaluation of terminal operators. Six terminal operators are conducting management and operation in a sound manner.

Table 13-C-1 Evaluation of Terminal Operators

Operator	Evaluation Items				General Evaluation
	Operation	Maintenance	Finance	Administration	
Terminal Operator: A	○	△	△	△	△
Terminal Operator: B	◎	◎	◎	△	◎
Terminal Operator: C	○	○	◎	◎	◎
Terminal Operator: D	○	△	◎	○	○
Terminal Operator: E	○	△	△	△	△
Terminal Operator: F	○	△	△	△	△
Terminal Operator: G	△	◎	◎	◎	◎
Terminal Operator: H	△	○	◎	△	△
Terminal Operator: I	△	◎	◎	◎	◎
Terminal Operator: J	○	◎	◎	○	◎
Terminal Operator: K	△	◎	△	○	△
Terminal Operator: L	○	△	△	◎	△
Terminal Operator: N	◎	△	△	○	△
Terminal Operator: P	○	△	◎	◎	◎

Notes; very good: ◎, good: ○, poor: △

Source: This table summarized by the Study Team from Report of Evaluation of Terminal Operator,

663. Therefore, it would be recommended that the management and operation of conventional terminal should be conducted by several operators centering on the above operators with sound conditions as well as PT.MTI and should be controlled independently by IPCII. It is also advisable to adopt a measure promoting some competition among these units.

664. Concerning the new development area in the Master Plan, management and operation of these areas should be carried out and shared by the new terminal operators.

13-D. SCHEME OF PORT DEVELOPMENT, OPERATION AND MANAGEMENT

13-D-1 Breakwater and Access Channel

665. Fundamental port infrastructure such as breakwaters and access channels are to be developed by the central government, and their development cost will be borne by her, since they require a huge cost and generate very little profit by their operation. In addition, the beneficiaries are widely distributed and difficult to specify.

666. However, when it is suitable for them to be managed together with inner channels and basins, they are transferred to the port management body (Pelindo-II in case of Tanjung Priok) for their management/operation.

13-D-2 Inner Channel and Basin

667. Development and management/operation of inner channel and basin in a port area will be basically the responsibility of the port management body and their cost will be borne by her.

13-D-3 Terminal

668. Terminal infrastructure including quay, front turning basin, land reclamation will be developed by the port management body and operated by the private sector, if the operation of the terminal is sufficiently profitable. The cost will be covered by future collection from an operator of the terminal, which should develop superstructure such as pavement, handling

equipment and other terminal facilities, depending on profit levels as well as the trend of demand. However, in case that a terminal will be newly developed and the project risk will be considered to be high due to the uncertainty of cargo demand, or there is an urgent need viewing from the national benefit, or a terminal is not likely to be profitable, it should be examined whether the Central Government will bear the initial development cost of infrastructure.

13-D-4 Port Inner Road and Port Access Road

669. Development and management/operation of port inner road will be the responsibility of the port management body and their cost will be borne by her since the major beneficiaries are port users.

670. On the other hand, the development and management / operation of port access road located outside of the port area will be the responsibility of the central government (DGH, Kimpraswil) since the major beneficiaries will be public transport users. (Specific beneficiaries cannot be identified.)

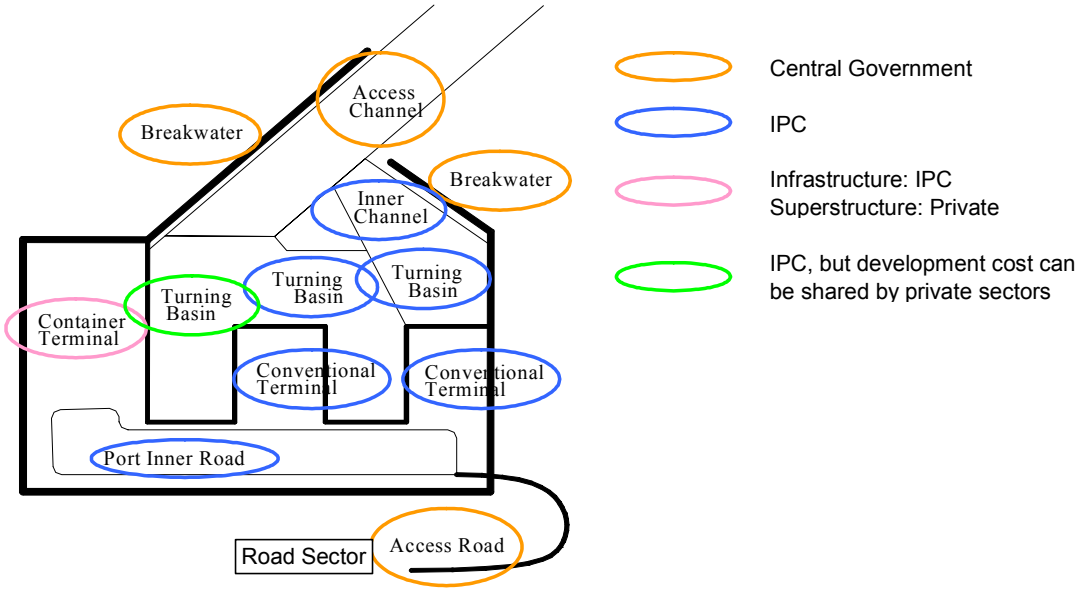
Table 13-D-1 Scheme of Port Development, Operation and Management

	Development	Management/ Operation	Remarks
Breakwater, Access Channel	CG	CG／IPC-2*1	
Inner Channel and Basin	IPC-2	IPC-2	
Terminal (Profitable)			Container terminal etc.
Infrastructure	IPC-2／CG*2	Private	Quay wall, front basin etc.
Superstructure	Private		Handling equipment, pavement etc.
Terminal (Less profitable)	IPC-2／CG*2	Private／IPC-2	Conventional terminal etc.
Port Inner Road	IPC-2	IPC-2	
Access Road	Road Sector*3	Road Sector*3	

*1： When an integrated management by IPC-2 needed

*2： In case that project risk will be considered to be high, it should be examined whether the CG will bear the cost.

*3： CG or Local Government



13-E. PRIVATE PARTICIPATION FOR MANAGEMENT AND OPERATION OF THE PORT

671. The Port of Tg. Priok introduced private participation for port operation under a different scheme according to the Government Privatization Policy. For the Bojonegara development, Government tried to introduce concession with the joint stock company formed by IPCII and several private companies under a partial BOT scheme.

672. In introducing the concession scheme, it is necessary to adopt an open tender system to secure fairness and transparency. As far as hearing from concerned staffs of the Government and IPCII, past process of decision to select private companies currently participating operation of JICT and Koja as well as Bojonegara, no evidence of tendering process could not be found by the study team.

673. As a result, a specific company is participating every container terminal at Tg. Priok and Bojonegara according to the brochure issued by the company. This situation seems to be an obstacle to fair and competitive operation of terminals.

13-E-1 General Concept of Private Participation

674. In general, there are several purposes to promote private participation. It is very important to clarify the purposes in order to promote private sector involvement not only in port services but also in port development. Those purposes are summarized as follows.

- To increase capacity of port facilities
- To relive the governmental sector from high investment burden
- To introduce higher standards efficiency through fair competition
- To provide high quality of service with cheaper price to user
- To transfer technology and know-how
- To facilitate fast-track implementation

675. However, there are not only the merits. More careful attention should be paid to negative aspects as below:

- Unlimited private participation tends to ignore the public interests including environmental consideration.
- Competition sometimes results in monopolization by strong private sector, which leads to inefficient operation and high-cost of service.
- Excessive competition often leads to lower service level and discriminatory treatment.

676. In this sense, moderate and appropriate control through planning and laws & regulation by government is strongly required. On the other hand, when competitive theory works well, too much involvement by the government often discourages the private sector from participating in projects. Therefore, it is necessary for the government to balance both requirements.

677. The central government and/or Pelindo-II should optimize the above private participation merits through the following action:

- To create a competitive environment in which the private sector will be able to compete with each other
- To distinguish between working fields suitable and unsuitable for private participation

678. A typical private participation system is PFI (Private Finance Initiative) which was first introduced by the United Kingdom in November 1992. throughout the 1980s, there were many discussions in UK concerning an ideal nature of public investment. After a series of studies and discussions, the following principles regarding public investment and private sector participation emerged.

679. For reference, the basic types of PFI (Private Finance Initiative) Scheme with main responsibility sharing system by private and public sector are shown in Table 13-E-1.

Table 13-E-1 Basic Types of PFI Scheme

Basic Types	Type-Names	Responsibility Sharing by Public/Private Sectors					Risky Sector
		Planning	Con-struction	Ownership	Admini-stration	Operation	
PCPO (Public Const./ Private Operation)	Operation Trust	Public	Public	Public	Public	Private	Investment Recovery (PB)
	Admin. Trust-I	Public	Public	Public	Private	Private	Inv./Admin.. .Risk (both)
	Admin. Trust-II	Public	Public Private	Public Private	Private	Private	Inv./Admin. Risk (both)
	Admin. Trust-III	Public Private	Public Private	Public Private	Private	Private	Inv./Admin Risk (both)
	Public Donation	Public	Public	Private	Private	Private	Admen. Risk (PR)
	Public Transfer	Public	Public	Private	Private	Private	Inv./Admin. Risk (PR)
PPPI (Public Plan/Private Invest)	Equivalent Exchange	Public Private	Private	Public Private	Private	Private	Public<Private Investment
	Land Trust-I	Public	Private	Public	Private	Private	Investment Recovery (PB)
	Land Trust-II	Public Private	Private	Private	Private	Private	Investment Recovery (both)
	Land Lease	Public Private	Private	Private	Private	Private	Administration Risk (both)
PCPO (Private Const./Pub. Operation)	BTO-I	Public	Private	Public	Public Private	Public Private	Investment Recovery (PB)
	BTO + Donation-I	Public Private	Private	Public	Private	Private	Inv./Admin. Risk (PR)
	BTO+ Dona.-II	Public Private	Private	Public	Private	Private	Inv./Admin. Risk (PR)
	Bowdon +Land	Public Private	Private	Public	Private	Private	Inv./Admin. Risk (both)
	BTO-II	Public Private	Private	Private	Private	Private	Inv./Admin. Risk (PR)

Source: JICA Study Team

13-E-2 Possible Project for Private Participation

680. Based on the "Basic Scheme of Development, Operation and Management of Port Facilities" described un the previous section, possible projects for private participation are as follows among the proposed projects in the Master Plan:

1) Tanjung Priok

Automobile Terminal

681. One of the possible projects for private participation at Tanjung Priok is an automobile terminal development. Rapid increase of handling volume of automobile products will be expected in the near future under the free trade agreement in AFTA. According to the demand and depending on handling charge, there is a possibility for the private sector to operate a car terminal.

Multipurpose Terminal

682. Generally speaking, multi purpose terminal including conventional cargo terminal seems difficult to make a profit. IPC-II should develops necessary infrastructure and leases to private operator.

Passenger Terminal

683. Revenues from passenger terminal buildings such as lease fee from tenants can be expected. The development of a passenger terminal building, which handles a large number of passengers, can be promoted on private sector project bases with initiative and encouragement of IPC-II.

2) Bojonegara

Container Terminal

684. Possible project for private participation at Bojonegara Priok is container terminal development. Handling volume of international containers will be expected to increase rapidly dealing with the overflow containers from Tanjung Priok. According to the demand, there is a strong possibility for the private sector to operate a container terminal based on concession.

13-F. INSTITUTIONAL IMPROVEMENT

13-F-1 Reinforcement of Port Promoting Function of IPCII

685. To promote use of the port, it is essential to establish a more useful and attractive port in terms of both facilities and management and operation for users such as shipping lines, shipping agents, forwarders, shippers consignees, etc. For that purpose, it is necessary to have a real time, broad, systematic grasp of the users' needs and to reflect their needs in the practical development and management of the port. The port should be marketed positively, providing users with pertinent information.

13-F-2 Introduction of Measures for Activation of the Organization

686. For activation of the organization, not only its reformation but also an awareness on the part the of its personnel concerning the need for rational and efficient management is important. For this purpose, many private companies adopt a Quality Control (QC) circle and a proposal activity by personnel. A QC circle is an activity for improvement involving each individual employee. Normally, it is carried out by a group within a single division or section. Members of the group identify problems concerning quality, safety, efficiency etc. and voluntarily try to solve the problems with everyone's cooperation. It is also carried out by a project team extending through several divisions concerned.

13-F-3 Improvement of Statistics System

687. Present port statistics are insufficient to formulate a future investment plan and effective management of port facilities. For instance, the cargo volumes are not sufficiently grasped commodity-wise especially in terms of container cargoes, and are not classified by origin and destination. IPCII does not prepare commodity-wise cargo volume by each berth and by specialized private terminals. Improvement of statistical system is essential for formulating a proper investment plan and effective management. Therefore, it is recommended to improve the statistics system by studying required information to be submitted from port users at the time of application for port utilization in line with the improvement of the information system.

13-F-4 Utilization of EDI

688. EDI Indonesia is an affiliated organization of IPCII, however, the study team could not obtain any information from EDI Indonesia on port activities to analyze the real berth performance. It seems that the level of knowledge and experience of IPCII staff pertaining to EDI is not sufficient to develop and operate EDI by themselves. Therefore IPCII should consider another option. EDI service provider can offer complete service such as consulting service related to EDI, introduction and starting EDI, supplying medium resources, operating service, etc. Therefore, it is recommended that IPCII and related bodies utilize an EDI service provider.

13-F-5 Integration of Customs Offices

689. The port related government offices seem to be arbitrarily located in the port area. In particular, there are three Customs Offices at respective administrative areas; therefore shipping agents and consignees have to submit documents to different offices for customs clearance in the same port. To streamline procedures, it is necessary to prepare an integrated customs office

at one location, and the customs clearance should be implemented in accordance with international standards.

13-F-6 Strengthening Cargo Handling Supervisor

690. To increase the efficiency of the cargo handling operation, training for supervisors is required. Possible training methods are recommended as follows:

- To invite a cargo planner now working for a shipping agent to a seminar for cargo supervisors.
- To delegate an IPCII supervisor to a terminal operator as an assistant trainee of the terminal operator planner. The trainee will acquire information on local circumstances and conditions as well as develop valuable connections.
- To invite an experienced captain or chief officer from a shipping company as a chief instructor of cargo supervisors.

691. It is also necessary to make a cargo supervisor's manual, and the cargo handling operation should be implemented according to the provisions of the manual.

13-F-7 Improvement of the Training System

692. IPCII has made much of personnel development and the Port Training Center (PTC) implements all of IPCII training programs which cover various fields of port management. In order to cope with the new management and operation system proposed in the Master Plan, it is recommended that PTC develop and supplement its training courses accordingly.

13-G. PORT WORKING AREA AND PORT INTEREST AREA

13-G-1 Background

693. Borders of Working Area and Interest Area of Tanjung Priok Port are described in Joint Agreement of Internal Affairs Minister and Communication Minister Number : 16 Year 1972 and Number : SK. 146/0/1972 date: June 1, 1972. However, due to validity of Law Number : 22 Year 2001 regarding Regional Autonomy and Law Number : 25 Year 2001 regarding Financial Proportion between Central and Regional Government, and Government Regulation Number : 69 Year 2001 regarding Port Affairs, borders of Working Area and Interest Area should be adjusted.

694. Port Interest Area is the water area surrounding the Port Working Area (water area) needs to secure navigation safety. Formerly, DLKR and DLKP was established not for water area but only for land area. Consequently, area of DLKR and DLKP in some ports are the same. It is necessary to review the rage of DLKR and DLKP by the new Port Regulation (G.R. Number 69.2001) due to decentralization at this time and set a proper range. The function of Port Working Area and port Interest Area are stipulated as below.

Table 13-G-1 Function of Port Working Area and Port Interest Area

Function	Port Working Area (DLKR)	Port Interest Area (DLKP)
Objectives of the Area	Land working area used for the activity of major facility and supporting facility Land Major Facility 1) Wharf 2) Warehouse 3) Stacking yard 4) Passenger terminal 5) Container terminal 6) Ro-Ro terminal 7) Reception facility 8) Bunker facility 9) Fire fighting facility 10) Warehouse facility for danger and toxic/goods 11) Facility of equipment maintenance and repairing and navigation aid Supporting Facility 1) Office for the port user 2) Public facility 3) Waste reception facility 4) Tourism, port and telecommunication facility 5) Hotel and restaurant 6) Area for port development commerce/trade Water Working Area used for the activity of channels and water facilities 1) Access channel for ships 2) Anchorage area 3) Port basin for mooring and ship maneuvering 4) Water for transshipment 5) Water for ships which carry dangerous goods 6) Water for the quarantine activity 7) Channel waters for intra port connection 8) Pilot waters 9) Waters for government ships	1) Ship/access channel to from the port 2) Emergency needs 3) Long –term port development 4) Ship's movement in the anchorage 5) Placement of abandoned ships 6) Sea trial 7) Compulsory pilotage water 8) Ship yard and ship repair
Obligation of the government	1) To provide government activity 2) To provide area service activity 3) To provide port supporting activity	1) To provide navigational aids 2) To guarantee security and order 3) To provide and maintain shipping channel 4) To protect the environment

13-G-2 Tanjung Priok

695. Port working area in the water area and land area of public port directly used for port activity. Port interest area is the water area surrounding the port working area and it is used for guaranteeing ship safety. The port working area and interest area determined based on the port

master plan. Port working area consists of the land area that is used for main facilities and supporting facilities, and water area used for an access channel, berthing area, transshipment area, port basin for mooring and ship maneuvering, pilotage activity and ships repair. Port interest area consists of waters out of the port working area and it is used for an access channel to and from port, emergency needs, long term development, trial run, pilotage activity, facility for development and maintenance of ship. Study team proposed as follow based on actual traffic record that number of vessel who will use buoy:

- $N=V\times\mu1\times\mu2\times T\div365\div24\div E$

  N : Number of vessel who will use buoy
  V : Calling vessel in 2025
  μ1 : Extra ratio
  μ2 : Buoy utilization ratio
  T : Buoy utilization time (hour)
  E : Buoy occupancy ratio

- $N=24{,}734\times1.28\times6\%\times132.4\div365\div24\div60\% = 48$

- Area = Number of Vessel×π×R2

  R=L+6D+30
  L : LOA (m)
  D : Water Depth (m)

696. Study team assumed as Table 13-G-2.

Table 13-G-2 Number of Vessel

Vessel Size	LOA(m)	R(m)	Number of Vessel
LOA 100-200	200	320	17
LOA 200-250	250	370	31
Total			48

697. Port Interest Area is considered emergency area, ship trial run activity and development, maintenance, and so on. Study team proposed port area is shown as Figure 13-G-1.

13-G-3 Bojonegara

698. Study team assumed based on Tanjung Priok actual traffic record that number of vessel who will use buoy.

- $N=2{,}992\times1.28\times6\%\times132.4\div365\div24\div60\% = 6$

699. Study team assumed as follow.

Table 13-G-3 Number of Vessel

Vessel Size	LOA(m)	R(m)	Number of Vessel
LOA 200-280	280	400	6

700. Port Interest Area is considered emergency area, ship trial run activity and development, maintenance, and so on. Study team proposed port area is shown as Figure 13-G-2.

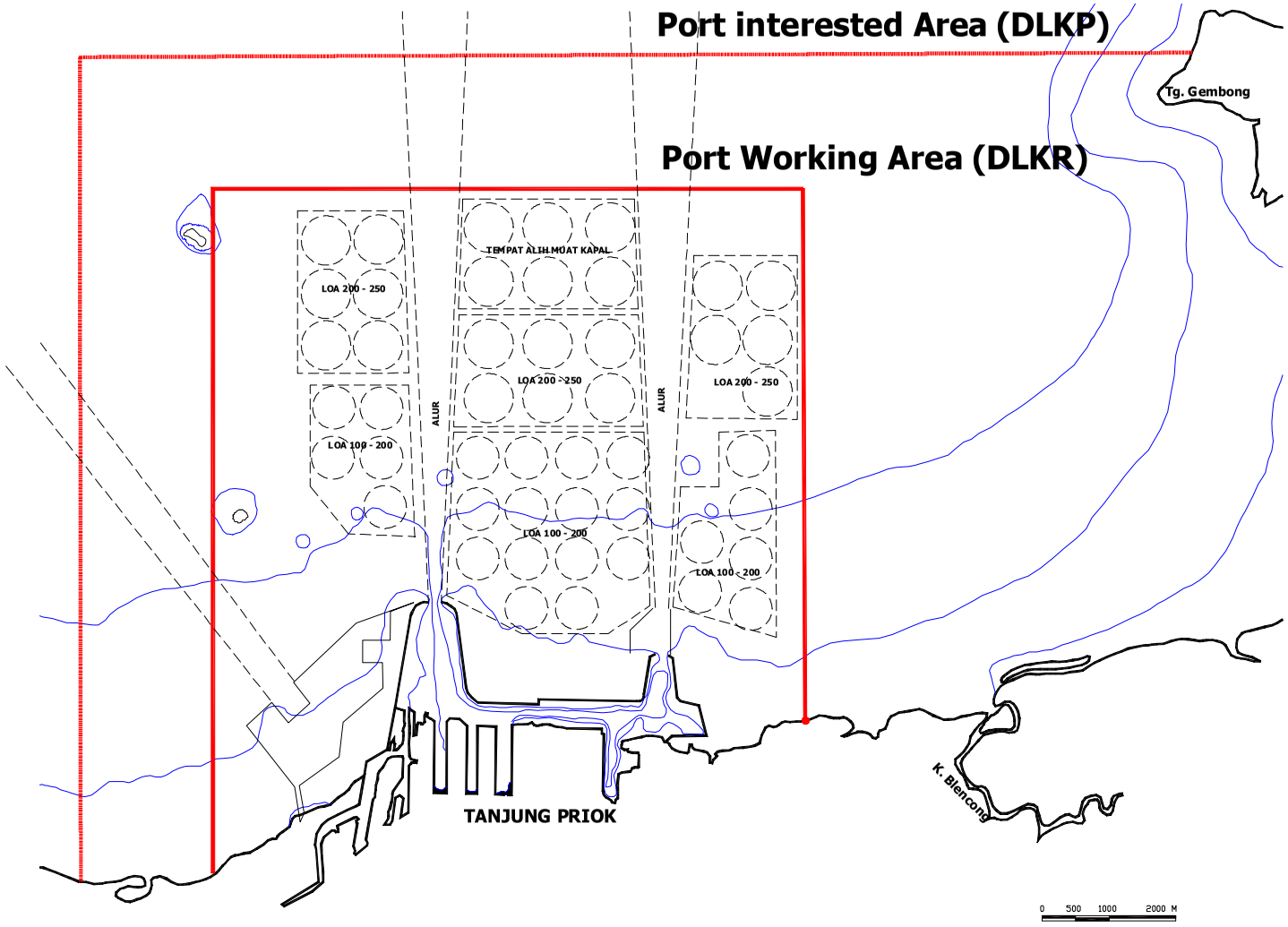


Figure 13-G-1 Port Working and Interest Area

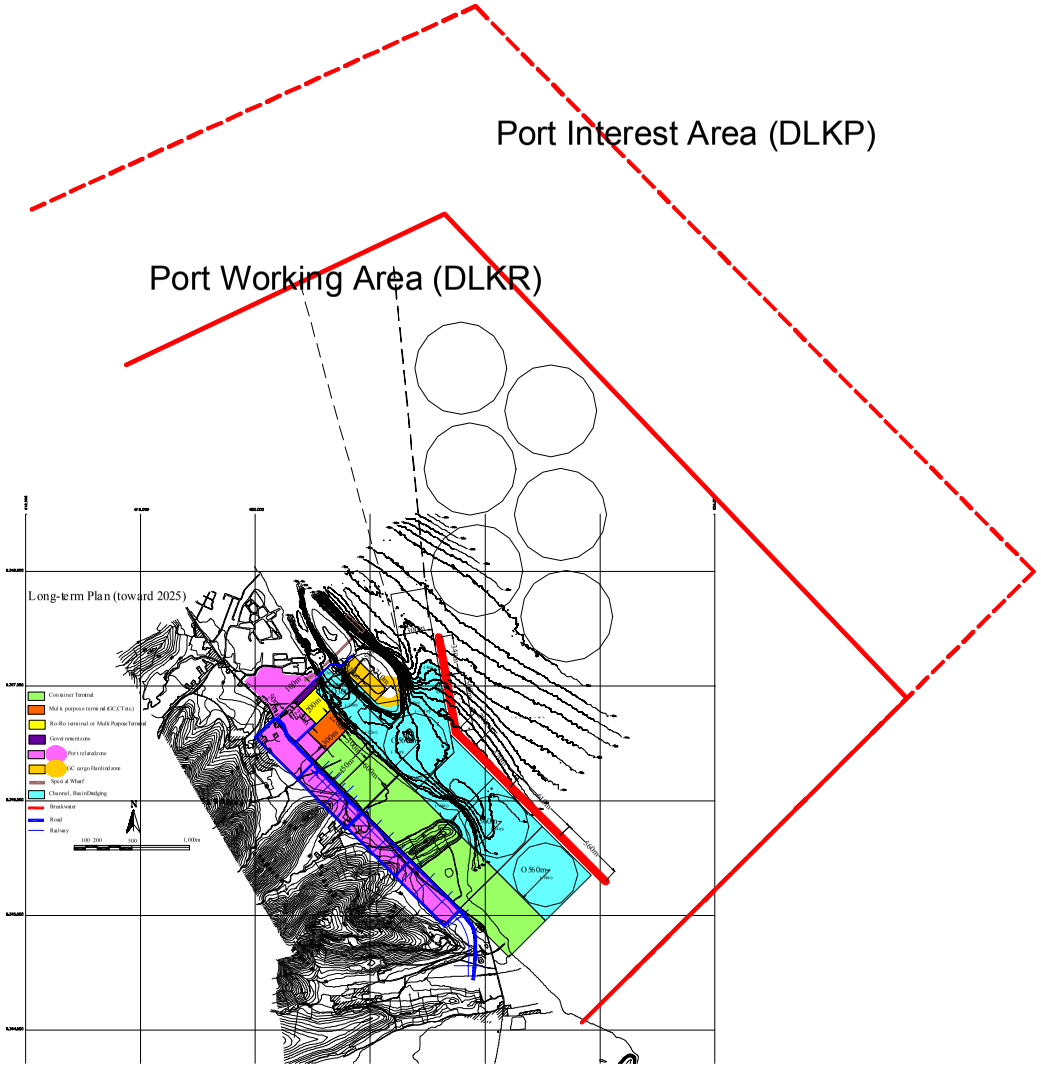


Figure 13-G-2 Port Working and Interest Area

Appendix A

Caluculation Result of Capacity and Number of Ship Calls
Tanjung Priok

International Container ('000TEU)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	2,056				
Without Nav. Imp.		2,927	871		3,048
Improved Navigation		3,644	1,587		3,679
2012	3,631	3,644	13	3,645	3,658
2025	3,776	3,807	31	3,816	3,847

Inter-island Container ('000TEU)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	199				
Without Nav. Imp.		710	511		2,516
Improved Navigation		939	740		3,302
2012	715	1,287	572	2,292	4,125
2025	1,545	2,073	527	4,952	6,643

GC ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	9,421				
Without Nav. Imp.		9,894	473		5,121
Improved Navigation		12,603	3,182		6,523
2012	11,971	14,121	2,149	6,176	7,285
2025	15,025	18,779	3,755	7,248	9,059
					6,824

Bag ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	3,769				
Without Nav. Imp.		4,047	278		1,776
Improved Navigation		5,155	1,386		2,263
2012	4,274	5,431	1,157	2,112	2,684
2025	5,365	6,482	1,117	2,633	3,181
					1,995

GC + Bag ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	13,190				
Without Nav. Imp.		13,940	750		6,897
Improved Navigation		17,758	4,568		8,786
2012	16,246	19,552	3,306	8,288	9,969
2025	20,389	25,262	4,872	9,881	12,240
					8,819

Dry Bulk (Public) ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	4,482				
Without Nav. Imp.		7,126	2,644		1,579
Improved Navigation		9,077	4,596		2,012
2012	6,563	11,315	4,752	1,837	3,168
2025	10,720	12,414	1,694	2,903	3,362

Dry Bulk (Special) ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	2,786				
Without Nav. Imp.		3,515	729		156
Improved Navigation		4,477	1,691		199
2012	4,441	4,477	37	198	199
2025	9,409	7,753	-1,656	372	307

Liquid Bulk (Public) ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	1,490				
Without Nav. Imp.		2,435	945		1,320
Improved Navigation		3,102	1,612		1,682
2012	2,386	3,011	625	1,313	1,657
2025	3,480	3,852	372	1,933	2,140

Liquid Bulk (Special) ('000ton)

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001	8,604				
Without Nav. Imp.		10,080	1,476		982
Improved Navigation		12,840	4,236		1,251
2012	9,258	12,840	3,582	902	1,251
2025	10,566	12,840	2,274	1,030	1,251

Total

	Demand	Capacity	Allowance	Ship Calls Demand	Ship Calls Capacity
2001					
Without Nav. Imp.					16,500
Improved Navigation					20,911
2012				18,475	24,027
2025				24,887	29,790

International Container Handling Capacity & Activity

	Existing 2001					After Completion of 3 New Berths in JICT & Koja					Partly Improvement of Navigational Condition					Improvement of Navigational Condition				
	JICT1(west)	JICT1(north	JICT2	Koja	Total	JICT1(west)	JICT1(north	JICT2	Koja	Total	JICT1(west)	JICT1(north	JICT2	Koja	Total	JICT1(west)	JICT1(north	JICT2	Koja	Total
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of Berths	4	1	2	2	9	4	3	2	3	12	4	3	2	3	12	4	3	2	3	12
Length of Berth (m)	900	225	505	450	2,080	900	700	505	650	2,755	900	700	505	650	2,755	900	700	505	650	2,755
Depth (m)	-11m	-14m	-8.6m	-14m		-11m	-14m	-8.6m	-14m		-11m	-14m	-8.6m	-14m		-11m	-14m	-8.6m	-14m	
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322
BOR (Berth Occupancy Ratio) - Berth-wise	**55%**	**59%**	**40%**	**59%**	**53%**	**46%**	**49%**	**33%**	**49%**	**45%**	**55%**	**59%**	**40%**	**59%**	**54%**	**55%**	**59%**	**40%**	**59%**	**54%**
Available Berthing Time (hrs)	18,393	4,905	6,588	9,811	39,697	15,240	12,193	5,459	12,193	45,085	18,393	14,716	6,588	14,716	54,413	18,393	14,716	6,588	14,716	54,413
Ship Size Distribution (GT, %)	100%	100%	100%	100%		100%	100%	100%	100%		100%	100%	100%	100%		100%	100%	100%	100%	
0～4999	13%	13%	3%	13%		13%	13%	3%	13%		13%	13%	3%	13%		13%	10%	3%	10%	
～9999	23%	22%	57%	22%		23%	22%	57%	22%		23%	22%	57%	22%		23%	20%	57%	20%	
～14999	15%	14%	19%	14%		15%	14%	19%	14%		15%	14%	19%	14%		15%	15%	19%	15%	
～19999	46%	44%	21%	44%		46%	44%	21%	44%		46%	44%	21%	44%		46%	35%	21%	35%	
～30000	3%	3%		3%		3%	3%		3%		3%	3%		3%		3%	10%		10%	
>30000		4%		4%			4%		4%			4%		4%			10%		10%	
Average Length of Ship (m)																				
0～4999	120	120	120	120		120	120	120	120		120	120	120	120		120	120	120	120	
～9999	150	150	150	150		150	150	150	150		150	150	150	150		150	150	150	150	
～14999	170	170	170	170		170	170	170	170		170	170	170	170		170	170	170	170	
～19999	200	200	200	200		200	200	200	200		200	200	200	200		200	200	200	200	
～30000	220	220	220	220		220	220	220	220		220	220	220	220		220	220	220	220	
>30000	280	280	280	280		280	280	280	280		280	280	280	280		280	280	280	280	
Number of Unloaded/Loaded Containers (box/ship)																				
0～4999	300	300	300	300		300	300	300	300		300	300	300	300		300	300	300	300	
～9999	500	500	500	500		500	500	500	500		500	500	500	500		500	500	500	500	
～14999	600	600	600	600		600	600	600	600		600	600	600	600		600	600	600	600	
～19999	800	800	800	800		800	800	800	800		800	800	800	800		800	800	800	800	
～30000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	
>30000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	
Number of Cranes Used (per ship)																				
0～4999	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	
～9999	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
～14999	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
～19999	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
～30000	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	
>30000	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Crane Productivity (box/crane/hr)	25	25	25	25		25	25	25	25		25	25	25	25		25	25	25	25	
Idling Time (hrs/ship)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Average Berthing Time (hrs/ship)	15.0	15.0	13.6	15.0		15.0	15.0	13.6	15.0		15.0	15.0	13.6	15.0		15.0	15.1	13.6	15.1	
0～4999	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	
～9999	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	
～14999	14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0	
～19999	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	
～30000	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	
>30000	15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3	
Annual Number of Ship Calls	**1,228**	**328**	**485**	**655**	**2,696**	**1,017**	**814**	**402**	**814**	**3,048**	**1,228**	**983**	**485**	**983**	**3,679**	**1,228**	**972**	**485**	**972**	**3,658**
0～4999	160	43	15	85	302	132	106	12	106	356	160	128	15	128	430	160	97	15	97	369
～9999	282	72	277	144	775	234	179	229	179	821	282	216	277	216	991	282	194	277	194	948
～14999	184	46	92	92	414	153	114	76	114	457	184	138	92	138	552	184	146	92	146	568
～19999	565	144	102	288	1,099	468	358	84	358	1,269	565	432	102	432	1,532	565	340	102	340	1,347
～30000	37	10		20	66	31	24		24	79	37	29		29	96	37	97		97	231
>30000		13		26	39		33		33	65		39		39	79		97		97	194
Berthing Time (hrs/year)	18,393	4,905	6,588	9,811		15,240	12,193	5,459	12,193		18,393	14,716	6,588	14,716		18,393	14,716	6,588	14,716	
0～4999	1,596	426	146	852		1,323	1,059	121	1,059		1,596	1,278	146	1,278		1,596	972	146	972	
～9999	3,389	865	3,318	1,730		2,808	2,150	2,750	2,150		3,389	2,595	3,318	2,595		3,389	2,334	3,318	2,334	
～14999	2,578	642	1,290	1,284		2,136	1,596	1,069	1,596		2,578	1,926	1,290	1,926		2,578	2,042	1,290	2,042	
～19999	10,166	2,595	1,834	5,189		8,424	6,450	1,519	6,450		10,166	7,784	1,834	7,784		10,166	6,126	1,834	6,126	
～30000	663	177		354		549	440		440		663	531		531		663	1,750		1,750	
>30000		201		402			499		499			603		603			1,491		1,491	
Annual Number of Unloaded/Loaded Boxes	788,264	214,583	279,443	429,166	1,711,456	653,134	533,393	231,539	533,393	1,951,458	788,264	643,749	279,443	643,749	2,355,206	788,264	680,703	279,443	680,703	2,429,112
0～4999	47,885	12,777	4,366	25,553	90,582	39,676	31,759	3,618	31,759	106,813	47,885	38,330	4,366	38,330	128,912	47,885	29,173	4,366	29,173	110,597
～9999	141,200	36,037	138,266	72,074	387,576	116,994	89,577	114,563	89,577	410,713	141,200	108,111	138,266	108,111	495,687	141,200	97,243	138,266	97,243	473,952
～14999	110,504	27,519	55,306	55,038	248,368	91,561	68,405	45,825	68,405	274,195	110,504	82,557	55,306	82,557	330,925	110,504	87,519	55,306	87,519	340,849
～19999	451,840	115,318	81,504	230,636	879,298	374,382	286,648	67,532	286,648	1,015,210	451,840	345,954	81,504	345,954	1,225,252	451,840	272,281	81,504	272,281	1,077,906
～30000	36,835	9,828		19,656	66,319	30,520	24,430		24,430	79,381	36,835	29,485		29,485	95,804	36,835	97,243		97,243	231,321
>30000		13,104		26,209	39,313		32,574		32,574	65,147		39,313		39,313	78,626		97,243		97,243	194,487
TEU/box	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Annual Throughput (TEU)	**1,182,396**	**321,875**	**419,164**	**643,749**	**2,567,184**	**979,701**	**800,090**	**347,308**	**800,090**	**2,927,188**	**1,182,396**	**965,624**	**419,164**	**965,624**	**3,532,808**	**1,182,396**	**1,021,054**	**419,164**	**1,021,054**	**3,643,668**
		1,504,271					1,779,790					2,148,020					2,203,450			
Annual Throughput per Berth (TEU/berth)	295,599	321,875	209,582	321,875	285,243	244,925	266,697	173,654	266,697	243,932	295,599	321,875	209,582	321,875	294,401	295,599	340,351	209,582	340,351	303,639
Annual Throughput per m (TEU/m)	1,314	1,431	830	1,431	1,234	1,089	1,143	688	1,231	1,063	1,314	1,379	830	1,486	1,282	1,314	1,459	830	1,571	1,323

International Container Handling Capacity & Activ

	Activity in 2012					Consolidation of International Container Terminal 2025					Activity in 2025				
	JICT1(west)	JICT1(north	JICT2	Koja	Total	JICT1(west)	JICT1(north	New	Koja	Total	JICT1(west)	JICT1(north	New	Koja	Total
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of Berths	4	3	2	3	12	4	3	2	3	12	4	3	2	3	12
Length of Berth (m)	900	700	505	650	2,755	900	700	500	650	2,750	900	700	500	650	2,750
Depth (m)	-11m	-14m	-8.6m	-14m		-11m	-14m	-12m	-14m		-11m	-14m	-12m	-14m	
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322
BOR (Berth Occupancy Ratio) - Berth-wise	**55%**	**59%**	**39%**	**59%**	**54%**	**55%**	**59%**	**55%**	**59%**	**57%**	**55%**	**58%**	**55%**	**58%**	**57%**
Available Berthing Time (hrs)	18,329	14,665	6,565	14,665	54,224	18,393	14,716	9,154	14,716	56,979	18,243	14,597	9,080	14,597	56,517
Ship Size Distribution (GT, %)	100%	100%	100%	100%		100%	100%	100%	100%		100%	100%	100%	100%	
0～4999	13%	10%	3%	10%		13%	10%	3%	10%		13%	10%	3%	10%	
～9999	23%	20%	57%	20%		23%	20%	57%	20%		23%	20%	57%	20%	
～14999	15%	15%	19%	15%		15%	15%	19%	15%		15%	15%	19%	15%	
～19999	46%	35%	21%	35%		46%	35%	21%	35%		46%	35%	21%	35%	
～30000	3%	10%		10%		3%	10%		10%		3%	10%		10%	
>30000		10%		10%			10%		10%			10%		10%	
Average Length of Ship (m)															
0～4999	120	120	120	120		120	120	120	120		120	120	120	120	
～9999	150	150	150	150		150	150	150	150		150	150	150	150	
～14999	170	170	170	170		170	170	170	170		170	170	170	170	
～19999	200	200	200	200		200	200	200	200		200	200	200	200	
～30000	220	220	220	220		220	220	220	220		220	220	220	220	
>30000	280	280	280	280		280	280	280	280		280	280	280	280	
Number of Unloaded/Loaded Containers (box/ship)															
0～4999	300	300	300	300		300	300	300	300		300	300	300	300	
～9999	500	500	500	500		500	500	500	500		500	500	500	500	
～14999	600	600	600	600		600	600	600	600		600	600	600	600	
～19999	800	800	800	800		800	800	800	800		800	800	800	800	
～30000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	
>30000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	
Number of Cranes Used (per ship)															
0～4999	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	
～9999	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
～14999	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
～19999	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
～30000	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	
>30000	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Crane Productivity (box/crane/hr)	25	25	25	25		25	25	25	25		25	25	25	25	
Idling Time (hrs/ship)	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	
Average Berthing Time (hrs/ship)	15.0	15.1	13.6	15.1		15.0	15.1	13.6	15.1		15.0	15.1	13.6	15.1	
0～4999	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	
～9999	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	
～14999	14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0	
～19999	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	
～30000	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	
>30000	15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3	
Annual Number of Ship Calls	**1,224**	**969**	**483**	**969**	**3,645**	**1,228**	**972**	**674**	**972**	**3,847**	**1,218**	**965**	**669**	**965**	**3,816**
0～4999	159	97	15	97	367	160	97	20	97	374	158	96	20	96	371
～9999	281	194	276	194	945	282	194	384	194	1,056	280	193	381	193	1,047
～14999	184	145	92	145	566	184	146	128	146	604	183	145	127	145	599
～19999	563	339	102	339	1,343	565	340	142	340	1,387	560	338	140	338	1,376
～30000	37	97		97	231	37	97		97	231	37	96		96	229
>30000		97		97	194		97		97	194		96		96	193
Berthing Time (hrs/year)	18,329	14,665	6,565	14,665		18,393	14,716	9,154	14,716		18,243	14,597	9,080	14,597	
0～4999	1,591	969	145	969		1,596	972	202	972		1,583	965	201	965	
～9999	3,377	2,326	3,307	2,326		3,389	2,334	4,611	2,334		3,361	2,315	4,573	2,315	
～14999	2,569	2,035	1,286	2,035		2,578	2,042	1,793	2,042		2,557	2,026	1,779	2,026	
～19999	10,131	6,105	1,827	6,105		10,166	6,126	2,548	6,126		10,084	6,077	2,527	6,077	
～30000	661	1,744		1,744		663	1,750		1,750		658	1,736		1,736	
>30000		1,486		1,486			1,491		1,491			1,479		1,479	
Annual Number of Unloaded/Loaded Boxes	785,523	678,336	278,471	678,336	2,420,667	788,264	680,703	388,278	680,703	2,537,948	781,861	675,174	385,125	675,174	2,517,333
0～4999	47,719	29,072	4,351	29,072	110,213	47,885	29,173	6,067	29,173	112,298	47,496	28,936	6,018	28,936	111,386
～9999	140,709	96,905	137,785	96,905	472,305	141,200	97,243	192,117	97,243	527,803	140,053	96,453	190,556	96,453	523,516
～14999	110,120	87,215	55,114	87,215	339,663	110,504	87,519	76,847	87,519	362,389	109,607	86,808	76,223	86,808	359,445
～19999	450,269	271,334	81,221	271,334	1,074,158	451,840	272,281	113,248	272,281	1,109,650	448,170	270,070	112,328	270,070	1,100,637
～30000	36,707	96,905		96,905	230,517	36,835	97,243		97,243	231,321	36,536	96,453		96,453	229,442
>30000		96,905		96,905	193,810		97,243		97,243	194,487		96,453		96,453	192,907
TEU/box	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Annual Throughput (TEU)	**1,178,285**	**1,017,504**	**417,707**	**1,017,504**	**3,631,000**	**1,182,396**	**1,021,054**	**582,417**	**1,021,054**	**3,806,922**	**1,172,792**	**1,012,761**	**577,687**	**1,012,761**	**3,776,000**
		2,195,789					2,203,450					2,185,553			
Annual Throughput per Berth (TEU/berth)	294,571	339,168	208,853	339,168	302,583	295,599	340,351	291,209	340,351	317,243	293,198	337,587	288,843	337,587	314,667
Annual Throughput per m (TEU/m)	1,309	1,454	827	1,565	1,318	1,314	1,459	1,165	1,571	1,384	1,303	1,447	1,155	1,558	1,373

Conventional Wharves Capacity (in 2012)

	001-003	004-004U	New Nusa	005-007	100-102	103-105	108-110	111-113	115-200	201-203	CT:Berth-wise 208-209	CT:Berth-wise 210-211	CT:Berth-wise 212-213	301-302	303-305	CT:Berth-wise MTI	WJ
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of Berths	3	4	4	4	4	3	3	4	2	3	3	2	2	2	3	3	
Length of Berth (m)	423	455	500	500	442	454	321	442	257	495	439	293	285	320	483	600	
Actual Depth (m)	-6m	-6m	-6m	-7m	-7~10m	-7m	-7m	-7~9m	-10m	-9m	-9m	-9m	-12m	-12m	-12m	-8m	-4m
Target Maximum Ship Size (GC)	4,999	4,999	4,999	4,999	14,999	4,999	4,999	9,999	14,999	9,999	9,999	9,999	9,999	30,000	30,000	9,999	4,999
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322
BOR (Berth Occupancy Ratio) - Berth Length-wise/Berth-wise	40%	40%	45%	45%	45%	45%	45%	45%	50%	45%	45%	55%	55%	45%	45%	55%	60%
Berthing Share by Cargo Type	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
(Container)											100%	100%	100%			100%	
(General)	80%		80%	80%		80%	50%	50%		30%				80%	80%		
(Bag)	20%		20%	20%		20%	50%	50%		30%				20%	20%		
(Dry B.)		50%			100%				50%	40%							100%
(Liquid B.)		50%							50%								
Annual Number of Ship Calls	**964**	**1,217**	**1,281**	**1,281**	**730**	**1,164**	**849**	**868**	**681**	**982**	**631**	**463**	**463**	**437**	**660**	**1,353**	
(Container)											631	463	463			1,353	
(General)	754		1,003	1,003		911	402	470		316				347	524		
(Bag)	209		278	278		253	447	398		267				90	136		
(Dry B.)		541			730				236	399							
(Liquid B.)		676							446								
Total (excluding CT)	964	1,217	1,281	1,281	730	1,164	849	868	681	982				437	660		
~4999	964	1,217	1,281	1,281	438	1,164	849	691	565	763	505	370	370	298	450	1,082	
~9999					146			177	69	219	126	93	93	83	125	271	
~14999					146				47					22	33		
~19999														17	26		
~30000														17	26		
Annual Throughput (ton, TEU)																	
(Container: TEU)											**196,923**	**144,410**	**144,410**			**422,162**	
(General)	1,206,928		1,604,957	1,604,957		1,457,301	643,989	928,065		623,610				968,673	1,462,090		
(Bag)	334,962		445,429	445,429		404,449	714,913	971,142		652,555				263,955	398,407		
(Dry B.)		973,674			3,634,534				1,174,051	1,285,648							
(Liquid B.)		1,217,093							830,995								
Total (excluding container: ton)	**1,541,890**	**2,190,767**	**2,050,386**	**2,050,386**	**3,634,534**	**1,861,750**	**1,358,902**	**1,899,207**	**2,005,047**	**2,561,813**				**1,232,628**	**1,860,498**		

Conventional Wharves Capacity (in 2012)

	Kali Japat	114	207	214/300 (CT:Berth-wise)	TBB (CT:Berth-wise)	Ex.Pass	Ex.JICT2 (CT:Berth-wise)	Ancol-1	Ancol-2 (CT:Berth-wise)	PMB (Berth-wise)	BOG (Berth-wise)	SAR/B (Berth-wise)	DKP (Berth-wise)	Total	Public	Special
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%			
Number of Berths	6	2		2	1	2	2	4		4	1	2	2	77	68	9
Length of Berth (m)	300	376		300	195	300		790		100	175	187	276	9,708	8,970	738
Actual Depth (m)	-4m	-10m	-4m	-12m	-12m	-7m	-8.6m	-10~12m	-10~12m	-6~10m	-6m	-10m	-9m			
Target Maximum Ship Size (GC)	4,999	14,999	4,999	30,000	30,000	4,999	9,999	30,000	30,000	na	na	na	na			
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322			
BOR (Berth Occupancy Ratio) - Berth Length-wise/Berth-wise	60%	45%	20%	60%	55%	45%	50%	50%	50%	90%	60%	80%	30%			
Berthing Share by Cargo Type	100%	100%		100%	100%	100%		100%		100%	100%	100%	100%			
(Container)				100%	100%											
(General)						80%		80%								
(Bag)						20%		20%								
(Dry B.)	60%	100%									100%	100%				
(Liquid B.)	40%									100%			100%			
Annual Number of Ship Calls	**1,177**	**621**		**984**	**231**	**718**		**1,162**		**812**	**92**	**107**	**440**	**20,370**	**18,919**	**1,451**
(Container)				984	231									4,125	4,125	
(General)						602		952						7,285	7,285	
(Bag)						116		210						2,684	2,684	
(Dry B.)	642	621									92	107		3,367	3,168	199
(Liquid B.)	535									812			440	2,908	1,657	1,251
Total (excluding CT)	1,177	621				718		1,162		812	92	107	440	16,244	14,793	1,451
~4999	1,177	373		787	185	718		787		325	5	16	220	16,881	16,315	565
~9999		124		197	46			222		41	23	5	176	2,235	1,991	245
~14999		124						58		122	32	5	22	612	430	181
~19999								48		41	32	5		169	91	78
~30000								48		284		75	22	473	91	381
Annual Throughput (ton, TEU)																
(Container: TEU)				**307,027**	**72,205**									**1,287,137**	**1,287,137**	
(General)						962,974		2,657,123						14,120,667	14,120,667	
(Bag)						185,527		614,379						5,431,147	5,431,147	
(Dry B.)	1,155,569	3,091,821									1,202,373	3,275,066		15,792,738	11,315,299	4,477,439
(Liquid B.)	962,974									11,569,610			1,270,277	15,850,949	3,011,062	12,839,887
Total (excluding container: ton)	**2,118,543**	**3,091,821**				**1,148,501**		**3,271,502**		**11,569,610**	**1,202,373**	**3,275,066**	**1,270,277**	**51,195,501**	**33,878,175**	**17,317,326**

Conventional Wharves Capacity (in 2025)

	001-003	004-004U	New Nusa	005-007	100-102	103-105	108-110	111-113	115-200	201-203	CT:Berth-wise 208-209	CT:Berth-wise 210-211	CT:Berth-wise 212-213	301-302	303-305	CT:Berth-wise MTI	WJ
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of Berths	3	4	4	2	4	3	3	4	2	3	3	2	2	2	3	5	
Length of Berth (m)	423	455	500	330	442	454	321	442	257	495	439	293	285	320	483	1,150	
Actual Depth (m)	-6m	-6m	-6m	-7m	-7~10m	-7m	-7m	-7~9m	-10m	-9m	-9m	-9m	-12m	-12m	-12m	-8m	-4m
Target Maximum Ship Size (GC)	4,999	4,999	4,999	4,999	14,999	4,999	4,999	9,999	14,999	9,999	9,999	9,999	9,999	30,000	30,000	9,999	4,999
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322
BOR (Berth Occupancy Ratio) - Berth Length-wise/Berth-wise	40%	40%	45%	45%	45%	45%	45%	45%	50%	45%	45%	55%	55%	45%	45%	60%	60%
Berthing Share by Cargo Type	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
(Container)											100%	100%	100%			100%	
(General)	80%	80%	80%	80%		80%	50%	50%		30%				80%	80%		
(Bag)	20%	20%	20%	20%		20%	50%	50%		30%				20%	20%		
(Dry B.)					100%				100%	40%							100%
(Liquid B.)																	
Annual Number of Ship Calls	**964**	**1,037**	**1,281**	**846**	**730**	**1,164**	**849**	**868**	**472**	**982**	**631**	**463**	**463**	**437**	**660**	**2,460**	
(Container)											631	463	463			2,460	
(General)	754	811	1,003	662		911	402	470		316				347	524		
(Bag)	209	225	278	184		253	447	398		267				90	136		
(Dry B.)					730				472	399							
(Liquid B.)																	
Total (excluding CT)	964	1,037	1,281	846	730	1,164	849	868	472	982				437	660		
~4999	964	1,037	1,281	846	438	1,164	849	691	283	763	505	370	370	298	450	1,968	
~9999					146			177	94	219	126	93	93	83	125	492	
~14999					146				94					22	33		
~19999														17	26		
~30000														17	26		
Annual Throughput (ton, TEU)																	
(Container: TEU)											**196,923**	**144,410**	**144,410**			**767,568**	
(General)	1,206,928	1,298,232	1,604,957	1,059,272		1,457,301	643,989	928,065		623,610				968,673	1,462,090		
(Bag)	334,962	360,302	445,429	293,983		404,449	714,913	971,142		652,555				263,955	398,407		
(Dry B.)					3,634,534				2,348,103	1,285,648							
(Liquid B.)																	
Total (excluding container: ton)	**1,541,890**	**1,658,534**	**2,050,386**	**1,353,255**	**3,634,534**	**1,861,750**	**1,358,902**	**1,899,207**	**2,348,103**	**2,561,813**				**1,232,628**	**1,860,498**		

Conventional Wharves Capacity (in 2025)

	Kali Japat	114	207	214/300 (CT:Berth-wise)	TBB (CT:Berth-wise)	Ex.Pass	Ex.JICT2 (CT:Berth-wise)	Ancol-1	Ancol-2 (CT:Berth-wise)	PMB (Berth-wise)	BOG (Berth-wise)	SAR/B (Berth-wise)	DKP (Berth-wise)	Total	Public	Special
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%			
Number of Berths	6	2		2	1	2	2	4	6	4	1	4	2	85	68	17
Length of Berth (m)	800	376		300	195	300	500	790	1,450	100	175	400	276	12,751	10,350	2,401
Actual Depth (m)	-4m	-10m	-4m	-12m	-12m	-7m	-8.6m	-10~12m	-10~12m	-6~10m	-6m	-10m	-9m			
Target Maximum Ship Size (GC)	4,999	14,999	4,999	30,000	30,000	4,999	9,999	30,000	30,000	na	na	na	na			
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322			
BOR (Berth Occupancy Ratio) - Berth Length-wise/Berth-wise	60%	45%	20%	60%	55%	45%	50%	50%	50%	90%	60%	80%	30%			
Berthing Share by Cargo Type	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
(Container)				100%	100%		100%		20%							
(General)						50%		80%	70%							
(Bag)						50%		20%	10%							
(Dry B.)	40%	100%									100%	100%				
(Liquid B.)	60%									100%			100%			
Annual Number of Ship Calls	**3,281**	**621**		**984**	**231**	**666**	**820**	**1,162**	**2,313**	**812**	**92**	**215**	**440**	**25,943**	**24,385**	**1,558**
(Container)				984	231		820		590					6,643	6,643	
(General)						376		952	1,530					9,059	9,059	
(Bag)						290		210	193					3,181	3,181	
(Dry B.)	1,141	621									92	215		3,669	3,362	307
(Liquid B.)	2,140									812			440	3,391	2,140	1,251
Total (excluding CT)	3,281	621				666		1,162	1,722	812	92	215	440	19,300	17,742	1,558
～4999	3,281	373		787	185	666	656	787	1,621	325	5	32	220	21,214	20,632	581
～9999		124		197	46		164	222	453	41	23	11	176	3,104	2,854	250
～14999		124						58	86	122	32	11	22	750	564	187
～19999								48	76	41	32	11		251	168	83
～30000								48	76	284		150	22	624	168	457
Annual Throughput (ton, TEU)																
(Container: TEU)				**307,027**	**72,205**		**255,856**		**184,216**					**2,072,615**	**2,072,615**	
(General)						601,859		2,657,123	4,267,373					18,779,471	18,779,471	
(Bag)						463,818		614,379	563,829					6,482,123	6,482,123	
(Dry B.)	2,054,345	3,091,821									1,202,373	6,550,133		20,166,958	12,414,452	7,752,506
(Liquid B.)	3,851,897									11,569,610			1,270,277	16,691,784	3,851,897	12,839,887
Total (excluding container: ton)	**5,906,242**	**3,091,821**				**1,065,677**		**3,271,502**	**4,831,202**	**11,569,610**	**1,202,373**	**6,550,133**	**1,270,277**	**62,120,336**	**41,527,943**	**20,592,392**

Berth Facilities, Demand and Number of Ship Calls

Bojonegara

		Number of Berths	Length of Berth (m)	Ship Calls International	Ship Calls Inter-island	Ship Calls Total	Throughput (TEU)
2008							
2009							
2010	CT1 & CT2	1	300	153	32	185	162,000
2011	CT1 & CT2	1	300	326	74	400	349,000
2012	CT1 & CT2	2	600	522	125	647	563,000
2013	CT1 & CT2	2	600	727	183	909	790,000
2014	CT1 ~ CT4	4	1200	844	253	1,097	1,035,000
2015	CT1 ~ CT4	4	1200	970	276	1,246	1,190,000
2016	CT1 ~ CT4	4	1200	1,098	298	1,396	1,345,000
2017	CT1 ~ CT4	4	1200	1,224	321	1,545	1,500,000
2018	CT1 ~ CT4	4	1800	1,349	346	1,695	1,655,000
2019	CT1 ~ CT6	6	1800	1,474	372	1,846	1,811,000
2020	CT1 ~ CT6	6	1800	1,599	394	1,993	1,966,000
2021	CT1 ~ CT6	6	1800	1,723	420	2,142	2,122,000
2022	CT1 ~ CT6	6	1800	1,845	446	2,290	2,277,000
2023	CT1 ~ CT6	6	1800	1,967	471	2,439	2,433,000
2024	CT1 ~ CT8	8	2400	2,089	500	2,589	2,589,000
2025	CT1 ~ CT8	8	2400	2,210	526	2,735	2,745,000

	Number of Berths	Length of Berth (m)	Throughput (ton)	Ship Calls
MPT	1	220	92,000	41
MPT	1	220	208,000	93
MPT	1	220	353,000	157
MPT	1	220	533,000	238
MPT	1	220	753,000	336
MPT & Q1	2	430	818,000	365
MPT & Q1	2	430	884,000	395
MPT & Q1	2	430	948,000	423
MPT & Q1	2	430	1,014,000	452
MPT & Q1	2	430	1,079,000	482
MPT & Q1	2	430	1,144,000	511
MPT & Q1	2	430	1,210,000	540
MPT, Q1~Q1	3	640	1,275,000	569
MPT, Q1~Q1	3	640	1,340,000	598
MPT, Q1~Q1	3	640	1,405,000	627
MPT, Q1~Q1	3	640	1,470,000	656
MPT, Q1~Q1	3	640	1,536,000	685
MPT, Q1~Q1	3	640	1,601,000	715

Container Handling Capacity & BOR (Berth-wise) - Bojonegara -
International Container

	Capa 2010	2010	2011	2012	2013	Capa 2014		2014	2015	2016	2017	2018	Capa 2019		2019	2020	2021	2022	2023	Capa 2024		2024	2025
	CT1 & CT2	CT1 & CT2	CT1 & CT2	CT1 & CT2	CT1 & CT2	CT3 & CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT5 & CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT7 & CT8	CT1 ~ CT8	CT1 ~ CT8	CT1 ~ CT8
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of Berths	2	1	1	2	2	2	4	4	4	4	4	4	2	6	6	6	6	6	6	2	8	8	8
Length of Berth (m)	600	600	600	600	600	600	1200	1200	1200	1200	1200	1800	600	1800	1800	1800	1800	1800	1800	600	2400	2400	2400
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322
BOR (Berth Occupancy Ratio) - Berth-wise	**60%**	**27%**	**57%**	**46%**	**64%**	**60%**	**60%**	**38%**	**44%**	**49%**	**55%**	**61%**	**60%**	**60%**	**44%**	**48%**	**52%**	**55%**	**59%**	**60%**	**60%**	**47%**	**50%**
Available Berthing Time (hrs)	9,986	2,230	4,753	7,611	10,583	9,986	19,973	12,653	14,557	16,465	18,362	20,236	9,986	29,959	22,114	23,981	25,839	27,673	29,512	9,986	39,946	31,340	33,146
Ship Size Distribution (GT, %)																							
0～4999	15%	15%	15%	15%	15%	10%		10%	10%	10%	10%	10%	10%		10%	10%	10%	10%	10%	10%		10%	10%
～9999	25%	25%	25%	25%	25%	20%		20%	20%	20%	20%	20%	20%		20%	20%	20%	20%	20%	20%		20%	20%
～14999	15%	15%	15%	15%	15%	15%		15%	15%	15%	15%	15%	15%		15%	15%	15%	15%	15%	15%		15%	15%
～19999	30%	30%	30%	30%	30%	20%		20%	20%	20%	20%	20%	20%		20%	20%	20%	20%	20%	20%		20%	20%
～30000	10%	10%	10%	10%	10%	20%		20%	20%	20%	20%	20%	20%		20%	20%	20%	20%	20%	20%		20%	20%
>30000	5%	5%	5%	5%	5%	15%		15%	15%	15%	15%	15%	15%		15%	15%	15%	15%	15%	15%		15%	15%
Average Length of Ship (m)																							
0～4999	120	120	120	120	120	120		120	120	120	120	120	120		120	120	120	120	120	120		120	120
～9999	150	150	150	150	150	150		150	150	150	150	150	150		150	150	150	150	150	150		150	150
～14999	170	170	170	170	170	170		170	170	170	170	170	170		170	170	170	170	170	170		170	170
～19999	200	200	200	200	200	200		200	200	200	200	200	200		200	200	200	200	200	200		200	200
～30000	220	220	220	220	220	220		220	220	220	220	220	220		220	220	220	220	220	220		220	220
>30000	280	280	280	280	280	280		280	280	280	280	280	280		280	280	280	280	280	280		280	280
Number of Unloaded/Loaded Containers (box/ship)																							
0～4999	300	300	300	300	300	300		300	300	300	300	300	300		300	300	300	300	300	300		300	300
～9999	500	500	500	500	500	500		500	500	500	500	500	500		500	500	500	500	500	500		500	500
～14999	600	600	600	600	600	600		600	600	600	600	600	600		600	600	600	600	600	600		600	600
～19999	800	800	800	800	800	800		800	800	800	800	800	800		800	800	800	800	800	800		800	800
～30000	1,000	1,000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	1,000	1,000		1,000	1,000
>30000	1,000	1,000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	1,000	1,000		1,000	1,000	1,000	1,000	1,000	1,000		1,000	1,000
Number of Cranes Used (per ship)																							
0～4999	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5
～9999	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
～14999	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
～19999	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
～30000	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5
>30000	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Crane Productivity (box/crane/hr)	25	25	25	25	25	25		25	25	25	25	25	25		25	25	25	25	25	25		25	25
Idling Time (hrs/ship)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Average Berthing Time (hrs/ship)	14.6	14.6	14.6	14.6	14.6	15.0		15.0	15.0	15.0	15.0	15.0	15.0		15.0	15.0	15.0	15.0	15.0	15.0		15.0	15.0
0～4999	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0
～9999	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0
～14999	14.0	14.0	14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0		14.0	14.0
～19999	18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0
～30000	18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0
>30000	15.3	15.3	15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3	15.3	15.3		15.3	15.3	15.3	15.3	15.3	15.3		15.3	15.3
Annual Number of Ship Calls	**686**	**153**	**326**	**522**	**727**	**666**		**844**	**970**	**1,098**	**1,224**	**1,349**	**666**		**1,474**	**1,599**	**1,723**	**1,845**	**1,967**	**666**		**2,089**	**2,210**
0～4999	103	23	49	78	109	67		84	97	110	122	135	67		147	160	172	184	197	67		209	221
～9999	171	38	82	131	182	133		169	194	220	245	270	133		295	320	345	369	393	133		418	442
～14999	103	23	49	78	109	100		127	146	165	184	202	100		221	240	258	277	295	100		313	331
～19999	206	46	98	157	218	133		169	194	220	245	270	133		295	320	345	369	393	133		418	442
～30000	69	15	33	52	73	133		169	194	220	245	270	133		295	320	345	369	393	133		418	442
>30000	34	8	16	26	36	100		127	146	165	184	202	100		221	240	258	277	295	100		313	331
Annual Number of Unloaded/Loaded Boxes	445,617	99,512	212,108	339,623	472,258	486,005	931,622	615,764	708,449	801,280	893,617	984,828	486,005	1,417,627	1,076,190	1,167,071	1,257,474	1,346,772	1,436,230	486,005	1,903,632	1,525,222	1,613,125
0～4999	30,850	6,889	14,684	23,512	32,695	19,973	50,823	25,305	29,114	32,929	36,724	40,472	19,973	70,796	44,227	47,962	51,677	55,347	59,023	19,973	90,769	62,680	66,293
～9999	85,696	19,137	40,790	65,312	90,819	66,576	152,272	84,351	97,048	109,764	122,413	134,908	66,576	218,848	147,423	159,873	172,257	184,489	196,744	66,576	285,424	208,935	220,976
～14999	61,701	13,779	29,369	47,025	65,390	59,918	121,619	75,916	87,343	98,788	110,172	121,417	59,918	181,538	132,681	143,885	155,031	166,040	177,069	59,918	241,456	188,041	198,878
～19999	164,536	36,743	78,317	125,399	174,372	106,522	271,057	134,962	155,277	175,623	195,861	215,853	106,522	377,579	235,877	255,796	275,611	295,183	314,790	106,522	484,100	334,295	353,562
～30000	68,557	15,310	32,632	52,250	72,655	133,152	201,709	168,702	194,096	219,529	244,827	269,816	133,152	334,861	294,847	319,746	344,513	368,979	393,488	133,152	468,013	417,869	441,952
>30000	34,278	7,655	16,316	26,125	36,328	99,864	134,142	126,527	145,572	164,647	183,620	202,362	99,864	234,006	221,135	239,809	258,385	276,734	295,116	99,864	333,870	313,402	331,464
TEU/box	1.54	1.54	1.54	1.55	1.55	1.55		1.55	1.56	1.56	1.57	1.57	1.58		1.58	1.58	1.58	1.59	1.59	1.60		1.60	1.60
Annual Throughput (TEU)	**685,137**	**153,000**	**327,000**	**525,000**	**732,000**	**755,332**	1,447,896	**957,000**	**1,104,000**	**1,252,000**	**1,400,000**	**1,547,000**	**765,458**	**2,232,763**	**1,695,000**	**1,843,000**	**1,991,000**	**2,138,000**	**2,286,000**	**775,583**	**3,037,879**	**2,434,000**	**2,581,000**
Annual Throughput per Berth (TEU/berth)	342,568	153,000	327,000	262,500	366,000	377,666	361,974	239,250	276,000	313,000	350,000	386,750	382,729	372,127	282,500	307,167	331,833	356,333	381,000	387,791	379,735	304,250	322,625
Annual Throughput per m (TEU/m)	1,142	255	545	875	1,220	1,259	1,207	798	920	1,043	1,167	859	1,276	1,240	942	1,024	1,106	1,188	1,270	1,293	1,266	1,014	1,075

Container Handling Capacity & BOR (Berth-wise) - Bojonegara -
Inter-island Container

	Capa 2010	2010	2011	2012	2013	Capa 2014		2014	2015	2016	2017	2018	Capa 2019		2019	2020	2021	2022	2023	Capa 2024		2024	2025
	CT1 & CT2	CT1 & CT2	CT1 & CT2	CT1 & CT2	CT1 & CT2	CT3 & CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT1 ~ CT4	CT5 & CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT1 ~ CT6	CT7 & CT8	CT1 ~ CT8	CT1 ~ CT8	CT1 ~ CT8
Operation Ratio	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Number of Berths	2	1	1	2	2	2	4	4	4	4	4	4	2	6	6	6	6	6	6	2	8	8	8
Length of Berth (m)	600	600	600	600	600	600	1200	1200	1200	1200	1200	1800	600	1800	1800	1800	1800	1800	1800	600	2400	2400	2400
Annual Operation Hours (hrs)	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322	8,322
BOR (Berth Occupancy Ratio) - Berth-wise	**60%**	**3%**	**7%**	**6%**	**9%**	**60%**	**60%**	**6%**	**7%**	**7%**	**8%**	**8%**	**60%**	**60%**	**6%**	**6%**	**7%**	**7%**	**7%**	**60%**	**60%**	**6%**	**6%**
Available Berthing Time (hrs)	9,986	252	580	983	1,437	9,986	19,973	1,992	2,168	2,345	2,521	2,723	9,986	29,959	2,925	3,101	3,303	3,505	3,706	9,986	39,946	3,933	4,135
Ship Size Distribution (GT, %)																							
0～4999	80%	80%	80%	80%	80%	80%		80%	80%	80%	80%	80%	80%		80%	80%	80%	80%	80%	80%		80%	80%
～9999	20%	20%	20%	20%	20%	20%		20%	20%	20%	20%	20%	20%		20%	20%	20%	20%	20%	20%		20%	20%
～14999																							
～19999																							
～30000																							
>30000																							
Average Length of Ship (m)																							
0～4999	120	120	120	120	120	120		120	120	120	120	120	120		120	120	120	120	120	120		120	120
～9999	150	150	150	150	150	150		150	150	150	150	150	150		150	150	150	150	150	150		150	150
～14999	170	170	170	170	170	170		170	170	170	170	170	170		170	170	170	170	170	170		170	170
～19999	200	200	200	200	200	200		200	200	200	200	200	200		200	200	200	200	200	200		200	200
～30000	220	220	220	220	220	220		220	220	220	220	220	220		220	220	220	220	220	220		220	220
>30000	280	280	280	280	280	280		280	280	280	280	280	280		280	280	280	280	280	280		280	280
Number of Unloaded/Loaded Containers (box/ship)																							
0～4999	200	200	200	200	200	200		200	200	200	200	200	200		200	200	200	200	200	200		200	200
～9999	400	400	400	400	400	400		400	400	400	400	400	400		400	400	400	400	400	400		400	400
～14999																							
～19999																							
～30000																							
>30000																							
Number of Cranes Used (per ship)																							
0～4999	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5
～9999	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
～14999	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
～19999	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
～30000	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5
>30000	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Crane Productivity (box/crane/hr)	25	25	25	25	25	25		25	25	25	25	25	25		25	25	25	25	25	25		25	25
Idling Time (hrs/ship)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Average Berthing Time (hrs/ship)	7.9	7.9	7.9	7.9	7.9	7.9		7.9	7.9	7.9	7.9	7.9	7.9		7.9	7.9	7.9	7.9	7.9	7.9		7.9	7.9
0～4999	7.3	7.3	7.3	7.3	7.3	7.3		7.3	7.3	7.3	7.3	7.3	7.3		7.3	7.3	7.3	7.3	7.3	7.3		7.3	7.3
～9999	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0
～14999	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0
～19999	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0
～30000	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0
>30000	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0
Annual Number of Ship Calls	**1,269**	**32**	**74**	**125**	**183**	**1,269**		**253**	**276**	**298**	**321**	**346**	**1,269**		**372**	**394**	**420**	**446**	**471**	**1,269**		**500**	**526**
0～4999	1,016	26	59	100	146	1,016		203	221	238	256	277	1,016		297	315	336	356	377	1,016		400	421
～9999	254	6	15	25	37	254		51	55	60	64	69	254		74	79	84	89	94	254		100	105
～14999																							
～19999																							
～30000																							
>30000																							
Annual Number of Unloaded/Loaded Boxes	304,670	7,692	17,692	30,000	43,846	304,670	609,340	60,769	66,154	71,538	76,923	83,077	304,670	914,009	89,231	94,615	100,769	106,923	113,077	304,670	1,218,679	120,000	126,154
0～4999	203,113	5,128	11,795	20,000	29,231	203,113	406,226	40,513	44,103	47,692	51,282	55,385	203,113	609,340	59,487	63,077	67,179	71,282	75,385	203,113	812,453	80,000	84,103
～9999	101,557	2,564	5,897	10,000	14,615	101,557	203,113	20,256	22,051	23,846	25,641	27,692	101,557	304,670	29,744	31,538	33,590	35,641	37,692	101,557	406,226	40,000	42,051
～14999																							
～19999																							
～30000																							
>30000																							
TEU/box	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Annual Throughput (TEU)	**396,071**	**10,000**	**23,000**	**39,000**	**57,000**	**396,071**	792,142	**79,000**	**86,000**	**93,000**	**100,000**	**108,000**	**396,071**	**1,188,212**	**116,000**	**123,000**	**131,000**	**139,000**	**147,000**	**396,071**	**1,584,283**	**156,000**	**164,000**
Annual Throughput per Berth (TEU/berth)	198,035	10,000	23,000	19,500	28,500	198,035	198,035	19,750	21,500	23,250	25,000	27,000	198,035	198,035	19,333	20,500	21,833	23,167	24,500	198,035	198,035	19,500	20,500
Annual Throughput per m (TEU/m)	660	17	38	65	95	660	660	66	72	78	83	60	660	660	64	68	73	77	82	660	660	65	68