



3.4 Palembang Port

(1) Outline of the Port

(a) Location and Roles

Palembang Port is located on the bank of the Musi River, which runs from the western mountain area through the central low land to the east coast in south Sumatra. (02° 59'08" South, 104°46'00"East) Its location is in Palembang city, the capital of South Sumatra Province. This port plays an important role in the economic activities of south Sumatra region. It has served the regional economy since 1924 at the current location.

Crude Oil and Coal are major natural resources in south Sumatra. Major industrial products are Plywood, Rubber, and Fertilizer. These goods are delivered from Palembang Port. Commodities for daily life are major cargoes to Palembang Port.



Figure 3.4-1 Location of Palembang Port

(b) Operation and Management

Palembang Port is under the management of Palembang Port Branch of PT(persero) Pelabuhan Indonesia II(PELINDO-II), whose headquarter is located in Jakarta in Java Island.

There are many private factories of the Petroleum, Fertilizer, and Plywood industries operating at the wharves along the Musi River. Boom Baru Area (24ha) and Sei Las Area (200ha) are public harbor areas owned by PELINDO.

Most port activities are conducted in the Boom Baru Area because the depth of the front water area of Sei Las Area is only 1.0mLSW. Boom Baru Area has conventional, container, and passenger terminals lined in a row. Private stevedores handle cargo in the conventional terminals. PELINDO handles containers in the container terminal.

Channels and anchorages are operated by PELINDO under the control of ADPEL, which is the harbor master.

(2) Use of the Port

(a) Cargo Throughput

Major container cargo is Rubber for export and general cargoes in container are imported. Other container cargoes are Plywood, Fertilizer, and Coffee for export. Rubber is carried to the general cargo terminals by barge from factories along the Musi River, and containerized into containers in the CFS in the yard.

Fertilizer and other commodities are imported via Singapore and loaded in general cargo terminals.

(b) Ship Calls

There are domestic shuttle service from Jakarta and international shuttle service from



Singapore. Semi container ships are used in both services.

General cargo vessels call in both domestic and international service. Domestic passenger boats round Sumatra Island.

(c) Port Procedures

Permission to enter the port is under the control of ADPEL, which is the harbor master. The procedure for port services is one-stop-application. An agent submits the required document to PELINDO. Then pilot, berth, cargo handling, and other services will be provided.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channel is about 60nm long along the Musi River. The shallowest part is in the middle of the channel. Its length is 0.5nm and the depth is only 3.7mLSW. This part is 150m wide. Due to this physical restriction, the traffic of this section is one way. A large vessel has to wait in anchorage or has to control its speed to pass through this section, using the tidal range of 4m. Maximum size of vessels is 180m long, 40m wide and 7m deep. The tonnage is between 10,000-15,000GT.

There is no restriction of height of vessels because no bridge is installed along the channel. However if a vessel goes to private wharves which are located at the upstream of public wharves, the maximum width of the vessel is about 25m because of the Ampera Bridge whose piers are equipped with an interval of 40m.

There are one anchorage in front of the mouth river and two anchorages in the port area.

ii) Pilot

Pilot Service is compulsory for vessels larger than 500GT due to the national regulation. Pilot station is located 8nm from the mouth of the river.

(b) Terminals

i) Outline

PELINDO has 5 terminals in Palembang Port. A conventional terminal and a container terminal are the main facilities.

Table 3.4-1 Terminals in Palembang Port

Name	Quay wall	Yard
Conventional Terminal	L=473m,6-7mLSW	D=10.5m
Container Terminal	L=265m,D=9.0-9.2mLSW	D=26m
Passenger Boat Terminal	L=280m,D=1-3mLSW	D=15m
Jet Wheel Terminal	L=27m	D=10m
Dolphin	(4-6mLSW)	-

Source: Palembang Port

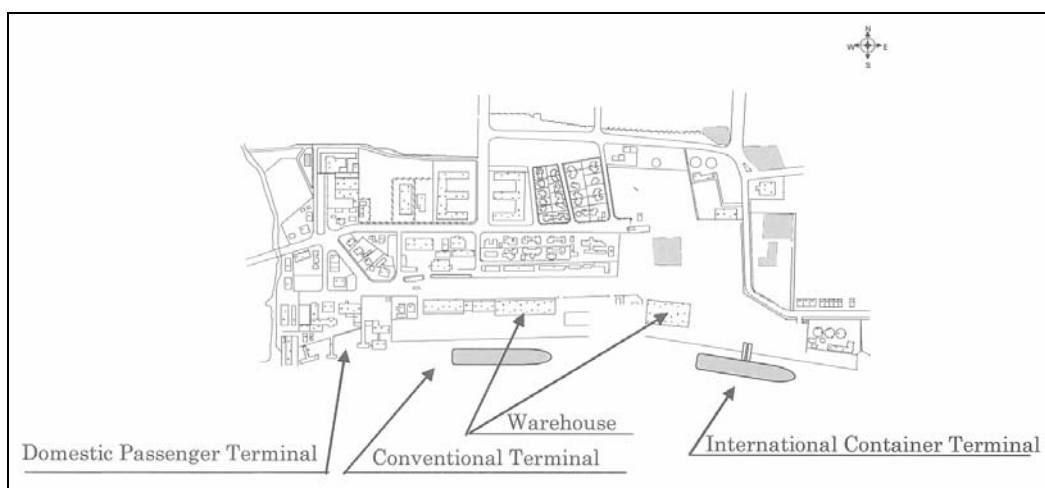


Figure 3.4-2 Layout of Terminals in Palembang Port (Boom Baru Area)

ii) Container Terminal

Container Cargo

The amount of international cargoes is about twice that of domestic ones. There are more shipped cargoes than landed cargoes among international cargoes. And more landed cargoes than shipped cargoes among domestic cargoes.

The majority of containers are the 20-foot type with 40-foot containers accounting for only about 10% of the total. The share of container cargo which is consolidated within the yard is about 30%. Most container cargoes pass through the gate in containers.

Table 3.4-2 Container Cargo in Palembang Port

	Year 2008		Year 2007	
Total TEUs	78,469		82,546	
Total Boxes	72,583		76,893	
Total Tonnage (tons)				
Landed Containers TEUs	Total TEUs	39,416	Total TEUs	41,579
	Laden TEUs	24,505	Laden TEUs	22,458
	Empty TEUs	14,911	Empty TEUs	19,120
Imported Containers	Total TEUs	22,819	Total TEUs	26,076
	Laden TEUs	11,184	Laden TEUs	9,385
	Empty TEUs	11,635	Empty TEUs	16,690
Domestic Containers	Total TEUs	16,597	Total TEUs	15,503
	Laden TEUs	13,321	Laden TEUs	13,073
	Empty TEUs	3,276	Empty TEUs	2,430
Shipped Containers TEUs	Total TEUs	39,053	Total TEUs	40,968
	Laden TEUs	33,224	Laden TEUs	34,548
	Empty TEUs	5,829	Empty TEUs	6,420
Exported Containers	Total TEUs	28,709	Total TEUs	31,591
	Laden TEUs	27,024	Laden TEUs	30,446
	Empty TEUs	1,685	Empty TEUs	1,145
Domestic Containers	Total TEUs	10,344	Total TEUs	9,377
	Laden TEUs	6,200	Laden TEUs	4,102
	Empty TEUs	4,144	Empty TEUs	5,275
Transshipment Ratio	N/A			

Source: Questionnaire



Ship Calls

Seven semi-container vessels call on Palembang Port. Five vessels are in a domestic route to Jakarta, and 2 vessels are in an international route to Singapore. (In May 2009, 6 vessels called on the port 22 times.)

Table 3.4-3 Liner Service to/from Palembang Port (as of May 2009)

Name of Vessel	Call Port	Operator	Interval of calls	Type
SINAR AMBON	SNG/PLN	Pt. Samudera Indonesia	5-6 days	SC
KOTA INTAN	SNG/PLN	Pt. Anugerah Transportasi Selatan	5-7 days	SC
LINTAS MAHAKAM	JAK/PLN	Pt. Bahari Sandi Pratama	7-10 days	SC
S. FORTUNE	JAK/PLN	Pt. Indonesia Fortune Lloyd	10 days	SC
MULTI ALPHA	JAK/PLN	Pt. Multiline Shipping Company	9 days	SC
SENDAS MAS	JAK/PLN	Pt. Bahana Utama Line	10 days	SC

Type SC: Semi Containership

Source: Palembang Port

Terminal Facilities

The container terminal has one quay crane whose pick-up ability is 30.5 tons. This crane was made in 1972, and it can handle 24 boxes per hour. A new crane capable of handling 45 tons will be added in 2010.

The area of the container yard is 47,000m², and will be 150,000m² in future by widening the yard.

(4) Landside Transportation

The trucks and trailers are the measure to access the port. No problem is observed in the access to the terminal.

(5) Future Plans

Coal is currently handled in the wharf of a state-owned mining company. A new port will provide public port service for about 270 companies which are mining coals in South Sumatra Province. This new port is planned around the mouth of the Musi River.



3.5 Panjang Port

(1) Outline of the Port

(a) Location and Roles

Panjang Port is located in the interior of Lampung Bay in the east end of Sumatra Island. (05° 28'23"South, 105°19'03"East) The water at the front of the wharf is deep and the port is easily accessible from the sea.

Major industries of Lampung Province are agriculture and forestry. There are factories to refine palm oil. Major goods of Panjang Port are Coffee, Palm Oil, and Pulp.



Figure 3.5-1 Location of Panjang Port

(b) Operation and Management

Panjang Port is under the management of Panjan Port Branch of PT(persero) Pelabuhan Indonesia II(PELINDO-II), whose headquarter is located in Jakarta in Java Island.

(2) Use of the Port

(a) Cargo Throughput

Palm Oil has been increasing in recent years. Container cargo is also increasing thanks largely to the containerization of Pulp.

About 70% of container cargo in 2008 is international cargo. Major goods in containers are Coffee and Pulp for export, and Machine, Parts, and Food for import. Most container cargoes are carried in a form of container. About 5% of container cargo use CFS.

PELINDO's multipurpose terminal handles Palm Oil exporting to India and Iron Ore to China.

Coal is exported to Taiwan, Spain and Japan in Bukit Asa's private terminal. Pulp is exported to local ports in Tanjung Enim Lestari's private terminal, and Crude Oil is carried from local ports in Pertamina's private terminal.

Table 3.5-1 Annual Cargo Handling in Panjang Port (2008)

(Unit: tons)

Terminal	Amount	Remarks
Container Terminal	1,407,572	-
Multipurpose Terminal	4,191,058	PELINDO's terminal and ISAB's terminal
Bulk Terminal	11,003,345	Private terminal

Source: Questionnaire

(b) Ship Calls

Annual number of calls of container vessels to Panjang Port is 282 in 2008, which is



equivalent to 5-6 calls per week.

Many international and domestic vessels berth at the multipurpose terminal. Some domestic vessels are old wooden-types.

Table 3.5-2 Annual Ship Calls in Panjang Port (2008)

Terminal	Amount	Remarks
Container Terminal	282	-
Multipurpose Terminal	1,527	PELINDO's terminal and ISAB's terminal
Bulk Terminal	947	Private terminal

(Unit: tons)

Source: Questionnaire

(c) Port Procedures

An agent is required to submit an application form to ADPEL, which is the harbor master, 1-2 days before the entry to the port. An agent is also required to come to a one-stop counter of PELINDO for the use of port facilities. Pilot, berthing, yard and warehouse, other ship services are provided by PELINO.

EDI is introduced for the use of the container terminal. The information is transmitted to PELINDO on line, and used for allocation plans of yard and berth.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Panjang Port faces the ocean, and the water is deep enough for access to/from the ocean. PELINDO's terminals are surrounded by a shore reef bank which is a natural breakwater. The access channel from the entrance of this natural breakwater to the port is 2km long. This channel is short but as narrow as 200m at the entrance. Due to this fact, the channel traffic is one-way, and vessels sometimes have to wait for berthing. But this only affects 2-5 vessels per month.

ii) Pilot

Pilot Service is compulsory for vessels larger than 500GT. Piloting starts at the center of Lampung Bay. Pilot service is compulsory for not only vessels using terminals guarded by natural breakwaters but also vessels using private terminals.

(b) Terminals

i) Outline

PELINDO has a container terminal and conventional terminals. The convention terminals are for multipurpose use and are divided into 4 wharves (Wharf A to Wharf D). ISAB terminals, which are located next to the container terminals were developed as a BOT infrastructure and operated by ISAB. There is a small terminal named Roro terminal, but is not used.

Multipurpose terminals were developed in 1996. No crane is equipped in the multipurpose terminals. Vessels with cranes use the terminals and the cargoes are handled by these cranes.

ISAB terminal has a storage area for Dry Bulk Cargo and tanks for CPO (Crude Palm Oil). A loader/unloader is equipped on the quay.



Table 3.5-3 Major terminals in Panjang Port

Terminal	Cargo	Quay wall	
Container	Container	L=401m,12-13mLSW	
Conventional	General	L=1,039m,7-12mLSW	
PIER ISAB	Dry Bulk, Liquid	L=300m,LSW	
Roro	--	L=20m,9mLSW	
PTPN VII	Liquid	L=140m	Private
Pertamina	Liquid	L=160m	Private
PT.Andatu Lestari	Dry Bulk(Plywood)	L=100m	Private
PT.Tanjung Emin Lestari	Dry Bulk(Pulp)	L=200m	Private
PT.Doosan Indonesia	Heavy Cargo	L=150m	Private
PT.Tambang Batubara Bukit Asam	Dry Bulk(Coal)	L=200m	Private

Source: Questionnaire

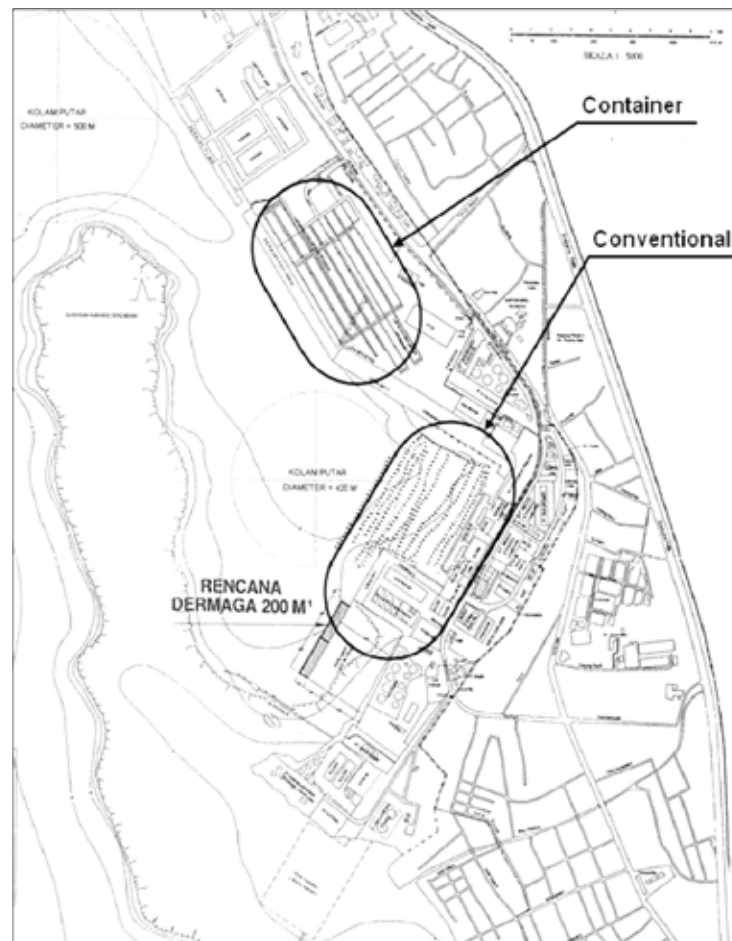


Figure 3.5-2 Layout of Terminals in Panjang Port

ii) Container Terminal

The container terminal was constructed in 1996. It has one berth and two quay cranes.

Container cargo

The amount of international cargo is twice that of domestic container cargo. The volume of loaded containers exported to international or local ports is more twice that of containers imported



from international or local ports.

Table 3.5-4 Container Cargo in Panjang Port

	Year 2008		Year 2007	
Total TEUs	104,142		79,767	
Total Boxes	89,129		67,825	
Total Tonnage (tons)	1,407,572		1,016,322	
Landed Containers TEUs	Total TEUs	53,803	Total TEUs	40,879
	Laden TEUs	22,412	Laden TEUs	16,806
	Empty TEUs	31,391	Empty TEUs	24,073
Imported Containers	Total TEUs	36,605	Total TEUs	27,848
	Laden TEUs		Laden TEUs	
	Empty TEUs		Empty TEUs	
Domestic Containers	Total TEUs	17,198	Total TEUs	13,031
	Laden TEUs		Laden TEUs	
	Empty TEUs		Empty TEUs	
Shipped Containers TEUs	Total TEUs	50,339	Total TEUs	38,888
	Laden TEUs	47,279	Laden TEUs	36,486
	Empty TEUs	3,060	Empty TEUs	2,402
Exported Containers	Total TEUs	36,696	Total TEUs	27,998
	Laden TEUs		Laden TEUs	
	Empty TEUs		Empty TEUs	
Domestic Containers	Total TEUs	13,643	Total TEUs	10,890
	Laden TEUs		Laden TEUs	
	Empty TEUs		Empty TEUs	
Transshipment Ratio	N/A			

Source: Questionnaire

Ship Calls

Panjang Port has 10 liner routes. Eight routes are feeder routes to/from Singapore Port or Tanjung Pelapas Port. Two routes are domestic routes to Tanjung Priok Port. The latter routes connects to international routes at KOJA terminal or MTI terminal in Tanjung Priok Port.

Table 3.5-5 Container Service to/from Panjang Port (as of May 2009)

Name of Vessel	Call Port	Operator	Interval of calls
APL LILAC	SNG/PNJ	APL	7days
ARTUS/ MEKONG CAYEN	PTP/SNG/PNJ		7days
ANDA KM	PTP/PAS/PNJ		10days
SINAR SUMBA	SNG/JAK/PNJ	Pt. Samudera Indonesia	7days
FRANCOISE G	PTP/SUR/JAK/ PNJ		30days
CAPE NORMAN	PTP/SUR/JAK/ PNJ		15days
CAPE FRANKLIN	SIN/SUR/JAK/ PNJ		30days
HANNE MSC	SIN/JAK/PNJ	MSC	30days
TMS EXPRESS/ TMS JADE	JAK(Koja,MTI) /PNJ		3-4days
MULTI ALFA	JAK(Koja,MTI) /PNJ	Pt. Multiline Shipping Company	3-4days

Notes) PNJ: Panjang, SNG: Singapore, PTP: Tanjung Pelapas, PAS: Pasir Gudang.,
JAK: Jakarta (Tanjung Priok), SUR: Surabaya (Tanjung Perak),



Facilities

Two quay cranes are equipped. Both cranes are Panamax types and their outreaches are 32m and 34m. The area of the container yard is 7.5 ha and has 5 RTGs. CFS is installed in the yard.

(4) Landside Transportation

Trucks and trailers are the only means of transportation to public terminals. Railway comes to a private terminal to carry Coal, but it is not used for the public terminal.

The port is located far from the town and there is no traffic congestion.

(5) Future Plans

Wharf C of the conventional terminal is being reconstructed and extended to 200m. This work will be completed in 2009. The lease contract of ISAB Terminal will terminate in 2017, and the terminal will be transferred to PELINDO. After 2017, this terminal will be used as a container terminal with new 2 quay cranes.



3.6 Pontianak Port

(1) Outline of the Port

(a) Location and Roles

Pontianak Port is located along the Kapus Kecil River, which runs through southeast Kalimantan. The port is about 17nm upstream from the mouth of the river. (00°01'00" South/ 109°20'00" East)

The port is in Pontianak City, the capital of West Kalimantan Province. This port is the largest port in Kalimantan Island. The major industries of this Province are forestry and agriculture, and lumber and rubber are major products in the region. Pontianak Port is the gateway for cargoes of West Kalimantan.



Figure 3.6-1 Location of Pontianak Port

(b) Operation and Management

Pontianak Port is under the management of PT(persero) Pelabuhan Indonesia II(PELINDO-II), whose headquarter is located in Jakarta in Java Island. PELINDO handles container cargoes directly, and private stevedores handle general cargoes under the management of PELINDO.

(2) Use of the Port

(a) Cargo Throughput

More than half of the total cargoes are containerized cargoes. Most cargoes handled in this port can be containerized and will be containerized in future. The ratio of container cargoes is increasing year by year.

The share of domestic cargoes is 90%. These cargoes consist of Food and Daily Goods for Pontianak City and its suburbs. There are some Fruit and Grain shipped from the port, but the volume is small.

International cargoes are Rubber, Lumber, and Plywood for export via Singapore Port. These cargoes are carried by barge from factories along the river. They are containerized in the CFS in the yard. Few cargoes are imported.

The majority of containers are 20ft. The ratio of 40 ft containers was 11% in 2008, and has been increasing in recent years.

Table 3.6-1 Annual Cargo Handling in Pontianak Port (2008)

Terminal	Amount	Note
Passenger Terminal (Wharf 1-2)	0	-
General Cargo Terminal(Wharf 3-6)	1,450,356	-
Container Terminal (Wharf 7-8)	1,596,381	132,732TEUs

Source: Questionnaire



(b) Ship Calls

An international semi-container ship goes to Singapore once a week. All of the cargoes on this ship are containers. Domestic liner service is a shuttle route for Jakarta. Passenger boats provide round service to Jakarta, Surabaya, and other ports.

Table 3.6-2 Annual Ship Calls in Pontianak Port

Terminal	Ship Calls	DWT
Passenger Terminal (Wharf 1-2)	440	2,037,367
General Cargo Terminal(Wharf 3-6)	1,669	1,656,404
Container Terminal (Wharf 7-8)	311	964,581

Source: Questionnaire

(c) Port Procedures

An agent is required to submit an application form to ADPEL, which is the harbor master. An agent is also required to come to a one-stop counter of PELINDO for the use of port facilities. Pilot, berthing, yard and warehouse, and other ship service are provided by PELINO.

If the application is for the first ship call to Pontianak Port, the document has to be submitted at least one day before the calling. If the information of the vessel has been put in the database in PELINDO, the application can be about 2 hours before calling. The document can be submitted by fax.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channel of Pontianak Port is about 17nm long. It starts at the mouth of the river, and the first 6 miles to the pilot station are very shallow. The designed depth is 4.0mLSW, and dredging work is necessary to maintain this depth. Large vessels have to pass this section during the period when the depth is 5.5m at full tide. The width of this section is 60m, and is one-way traffic. The channel between the pilot station and the port is 11nm long and is 11mLSW and 300m wide. This section can support two-way traffic.

Due to the shallow and narrow section, the traffic is controlled. Three to 4 vessels pass through the channel in convoy. Vessels to PELINDO's public terminals and private terminals have the same priority. They are served in a first-come-first-go order.

ii) Pilot

Pilot service is compulsory for all vessels larger than 500GT for the whole section of the channel. Tug boat service is necessary for vessels which are more than 70m long.

(b) Terminals

i) Outline

Pontianak Port has eight berths. The container terminal named 'International Container Terminal' has two berths and handles both international and domestic containers. The multipurpose terminal sometimes handles containers as well, especially at No.6 berth which is next to the container terminal. Containers are stored in the yard of the multipurpose terminal as well.



Table 3.6-3 Terminals in Pontianak Port

Terminal	Quay Wall	Note
Passenger (No.1)	L=200, 5.0mLSW	
Passenger (No.2)	L=125m, 5.0mLSW	
Multipurpose (No.3)	L=117m, 5.0mLSW	
Multipurpose (No.4)	L=100m, 5.0mLSW	
Multipurpose (No.5)	L=100m, 5.0mLSW	
Multipurpose (No.6)	L=90m, 5.0mLSW	
Container (No.7)	L=102m, 5.0mLSW	In line
Container (No.8)	L=103m, 5.0mLSW	2 quay cranes

Source: Pontianak Port

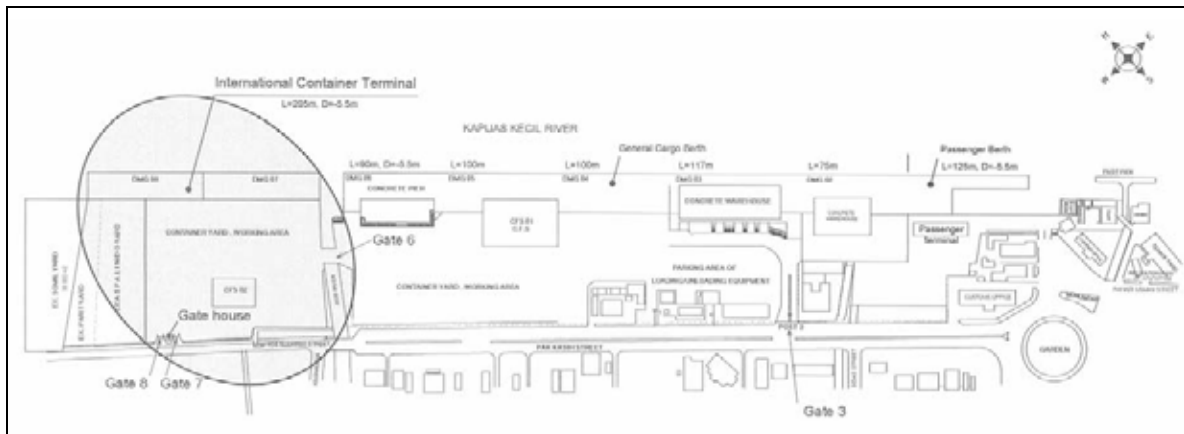


Figure 3.6-2 Layout of Terminals in Pontianak Port

ii) Container Terminal

Most of containers are domestic containers.

The demand for container will increase in future because most of cargoes can be containerized .

Container Cargo

Container volume of 132,732TEUs was handled in 2008. Laden containers amounted to 94,730TEUs, while 60,631TEU (64%) were landed containers.



Table 3.6-4 Container Cargo in Pontianak Port

	Year 2008		Year 2007	
Total TEUs	132,732		143,443	
Total Boxes	119,413		131,619	
Total Tonnage (tons)	1,596,381		1,671,114	
Landed Containers TEUs	Total TEUs	65,727	Total TEUs	70,965
	Laden TEUs	60,631	Laden TEUs	63,350
	Empty TEUs	5,096	Empty TEUs	7,615
Imported Containers	Total TEUs	6,862	Total TEUs	8,882
	Laden TEUs	3,558	Laden TEUs	2,889
	Empty TEUs	3,304	Empty TEUs	5,993
Domestic Containers	Total TEUs	58,865	Total TEUs	62,083
	Laden TEUs	57,073	Laden TEUs	60,461
	Empty TEUs	1,792	Empty TEUs	1,622
Shipped Containers TEUs	Total TEUs	67,005	Total TEUs	72,478
	Laden TEUs	34,099	Laden TEUs	35,392
	Empty TEUs	32,906	Empty TEUs	37,086
Exported Containers	Total TEUs	7,795	Total TEUs	10,027
	Laden TEUs	6,817	Laden TEUs	8,830
	Empty TEUs	978	Empty TEUs	1,197
Domestic Containers	Total TEUs	59,210	Total TEUs	62,451
	Laden TEUs	27,282	Laden TEUs	26,562
	Empty TEUs	31,928	Empty TEUs	35,889
Transshipment Ratio	N/A			

Source: Questionnaire

Ship Calls

There are 6 routes for container liner service. Five routes are shuttle routes to Jakarta, and one route is a weekly international liner service to Singapore Port.

Table 3.6-5 Liner Service to/from Pontianak Port (as of June 2009)

Name of Vessel	Call Port	Operator	Frequency per year	Type
JASA SETIA	SNG/PTI	Jasamata	52	SC
GUHI MAS KUARA MAS WSTUARI MAS	JAK/PTI	Temas Line	104	C
SINAR DEMAK SINAR ENDE	JAK/PTI	Sanudera Indonesia	104	C
CJN-PANJANG CJN-LEKSOMAWA	JAK/PTI	Jakarta Lloyd	104	SC
FINTA BAHARI WANA BAHARI	JAK/PTI	Hahana Baruna Khatulitiw	104	SC
TANTO HORAS TANTO HARMONI LUMOSO SERAMAT	JAK/PTI	Tanto Intim Line	104	SC

Source: Pontianak Port

Facility

The container terminal is 205m long. It is used as 2 berths because vessel sizes are 90-100m in Pontianak Port. It has 2 quay cranes. One was made in 1960 and the other in 1969. Each crane is



capable of handling 24 boxes per hour, but 13 boxes are the maximum at noon time due to the congestion in the yard.

Approx. 300-600 boxes, 500 boxes as average, are handled for one vessel. It takes 42 hours for 500 boxes.

Some containers are handled in the multipurpose terminal with cranes on a vessel.

Laden containers are piled up in 2 boxes height in the yard because many containers are de-containerized in the yard by forklift trucks and man-power.

(4) Landside Transportation

Truck and trailers are the only transportation on the land side. Because the destinations of landed container cargoes are located in means of the city, 60-70% of landed containers are de-containerized in the yard of the port. Another reason for the high rate of de-containerization is that the container trailers are risky in the city. The port is located in the city and traffic is congested.

Gates are closed between 6-9 a.m. by the request of the city to mitigate congestion.

(5) Future Plans

RTGs are planned to be introduced make the container yard effective.

The depth of the channel should be 5.5m to effective running vessels. Pontianak port is requesting budget for dredging work to the Government.



3.7 Tanjung Perak Port

(1) Outline of the Port

(a) Location and Roles

The Port of Tanjung Perak is one of the main gateway ports of Indonesia, which is located in the northern part of Surabaya City facing Madura Strait ($7^{\circ}15' 54''$ S and $112^{\circ} 32' 22''$ E). It is the principal port in East Java and the maritime transportation hub for the eastern region of Indonesia servicing both international and inter-island shipping in the region. The Port of Tanjung Perak has contributed greatly to the economic development of the eastern region of Indonesia influencing the growth of trade and development in East Java.



Figure 3.7-1 Location of Tanjung Perak Port



Figure 3.7-2 Terminal Layout

(b) Operation and Management

Berlian Terminal, Nilam Terminal, Mirah Terminal and Kalimas Terminal are operated by Tanjung Perak Port Branch of PELINDO III itself. TPS terminal and Jamrud terminal are owned



and managed by affiliated companies of PELINDO III. Pilotage for all vessels entering the Port of Tanjung Perak is executed by Tanjung Perak Port Branch of PELINDO III.. On the other hand, ADPEL is responsible for harbor master, port security and safe navigation.

A new law entitled “Law of the Republic Indonesia, Number 17 Year 2008, Regarding Navigation” was established in 2008 for the purpose of reforming the port system. According to the law, a port authority will be established for each port and PELINDO will become one of the terminal operators.

(2) Use of the Port

(a) Cargo Throughput

The total cargo volume of the Port of Tanjung Perak in 2008 is 12.01 million tons; export of 1.07 million tons, import of 3.88 million tons and domestic trade of 7.06 million tons. Total container throughput is 1,244,934TEU; export of 473,923TEU, import of 507,300TEU and domestic trade of 263,711TEU.

Table 3.7-1 Cargo Volume of the Port of Tanjung Perak (2008)

Cargo	(Unit: ton)				
	General	Dry Bulk	Liquid Bulk	Others	Total
Foreign	1,411,789	2,843,319	695,967	-	4,951,075
Export	432,676	176,332	462,693	-	1,071,701
Import	979,113	2,666,987	233,274	-	3,879,374
Domestic	2,760,844	4,045,223	196,453	57,562	7,060,082
Total	4,172,633	6,888,542	892,420	57,562	12,011,157

Source: Questionnaire

(b) Ship Calls

Number of vessels entering the Port of Tanjung Perak in 2008 amounts to 15,399; 2,346 of foreign flag and 13,053 of Indonesian flag. Numbers of vessel according to ship types are shown in the table below.

Table 3.7-2 Calling Vessel of the Port of Tanjung Perak (2008)

	total	Container vessel	Conventional vessel	Bulk carrier	Tanker	Passenger vessel	RORO vessel	Others
Foreign	2,346	960	-	975	410	1	-	-
Domestic	13,053	3,889	855	5,516	1,345	1,445	-	3
Total	15,399	4,849	855	6,491	1,755	1446	-	3

Source: Questionnaire

(c) Port Procedures

ADPEL serves the harbor master is charged with giving permission of port entry to vessels. It takes one day for a vessel to berth on average. One stop service for CIQ clearance and others at the port is planned to be introduced in 2009.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Main approach channel to the port is the west channel where dimensions are 24 miles in length, 100m in width and 9.5 m in depth. Maximum navigational vessel size is 35,000DWT at present. Tidal range is 2.4m and there are no obstacles in air clearance. 24 buoys are installed along



the channel. Maintenance dredging is implemented; dredging of approximately 250,000m³ has taken place in the last two years. In order for larger vessels to enter the port, a deepening and widening project aiming at 12m in depth and 200m in width is planned but an oil pipeline placed under the channel bed may be an obstacle to deepening the channel.

ii) Pilot

All foreign flag and Indonesian flag vessels which enter the port are required to be guided by a pilot who belongs to Tanjung Perak Port Branch of PELINDO III.

(b) Terminals

There are six public terminals; TPS terminal, Jamrud terminal, Berlian Terminal, Terminal, Mirah Terminal and Kalimas Terminal. Function, dimensions and usage conditions of each terminal are shown in the Table.

Table 3.7-3 Terminals of the Port of Tanjung Perak

Name of Terminal	Function	Owner Management	Length(m)	Calling Vessels	Cargo Volume (ton)
TPS	Container	TPS	1,450	1,497	25,563,428
Jamrud	Multi-purpose	TJP-branch	2,210	5,835	6,254,635
Berlian	Multi-purpose	BJTI	1,625	2,097	2,468,795
Nilam	Multi-purpose	TJP-Branch	930	2,465	3,895,267
Mirah	Multi-purpose	TJP-Branch	640	1,982	535,492
Kalimas	Conventional	TJP-Branch	2,900	3,016	623,033
Total	-	-	9,755	16,892	39,340,650

TJP-branch : PELINDO Tanjung Perak Branch

Source: Questionnaire/Interview

[Surabaya Container Terminal (TPS)]

TPS terminal is a container terminal located at the west area of the port. It is managed and operated by Surabaya Container Terminal (TPS) which is one of the affiliated companies of PELINDO III, a state enterprise. TPS is a joint venture company funded by PELINDO III and DP World.

Container throughput in 2007 and 2008 amounted to 1,161,975 TEU (848,707BOX)/25,563,428 ton and 1,119,351 TEU (804,450BOX)/24,625,722 ton respectively. It shows an increase of 3.8% over the previous year.

Table 3.7-4 Container Throughput of TPS Terminal

	2008			2007		
	Total	Laden	Empty	Total	Laden	Empty
Landed Container	572,192	475,603	96,590	544,380	415,954	128,425
Foreign	473,173	424,624	48,549	452,840	373,359	79,482
Domestic	99,020	50,979	48,041	91,539	42,596	48,944
Shipped Container	589,782	526,877	62,905	574,972	531,813	43,159
Foreign	506,888	459,892	46,996	502,013	473,534	28,479
Domestic	82,894	66,985	15,909	72,959	58,279	14,680
Total	1,161,975	1,002,480	159,495	1,119,353	947,768	171,585
Foreign	980,061	884,516	95,545	954,854	846,893	107,961
Domestic	181,914	117,964	63,950	164,499	100,875	63,624

Source: Questionnaire



It is composed of an international container wharf, a domestic container wharf, an international container yard, a domestic container yard and a bridge road connecting the wharves with the terminals. Total length of the quay is 1,450 m and the area of container yard is 40ha. The capacity of the terminal is planned as 2,000,000 TEU per year.

The international container wharf consists of four berths and has a 1000m-long quay with a depth of 10.5m and a apron of 50m. Nine quay container cranes whose capacity is 40 ton and out reach corresponds to 13-row container vessels are installed. Maximum accommodated vessel size is 55,000DWT. Domestic container wharf consists of two berths and has a 450m-long quay with a depth of 7.5m and a apron of 50m. Two quay container cranes are installed.

Total area is 93ha; 30 ha is used for an international container yard and 10 ha for a domestic container yard. Capacity of the terminal is 31,000 TEU; 27,523 TEU for stuffed containers and 3,477 TEU for empty containers; 354 refer plugs are prepared. Main cargo handling equipment consists of 27 transfer cranes, 2 reach stackers and 3 top lifters.

TPS provides services such as mooring, cargo handling, container stacking, container delivery, water supply, CFS service etc as an operator. The property of land belongs to PELINDO but quay cranes and cargo handling equipment in the yard are owned by TPS.

Average productivity of a crane in 2008 is 20.4 moves/hour/crane in gross and 26 box/hour/crane in net. Occupancy ratio of wharf is 37.5 % in the international wharf and 42.6 % in the domestic wharf. Cargo handling is carried out 24 hours per day by three shifts and eleven gates are prepared and open all day long. All containers are transported by trucks and there are no inland container deposes operated by TPS outside of the port.

[Berlian terminal]

Berlian terminal is a multipurpose terminal located at the center of the port. It is managed and operated by Berlian Jasa Terminal (BJI) which is one of the affiliated companies of PELINDO III, a state enterprise. It is composed of three wharves. East wharf has an area of 1.2 ha a quay of 785m in length and 9.5m in depth with an apron of 15m in width. West wharf has an area of 1.2 ha and a quay of 700m in length and 9m in depth with an apron of 15m in width. North wharf has an area of 0.2 ha and a quay of 140m in length and 6.5m in depth with an apron of 15m in width.

Regarding container handling, the container yard is divided into an international container yard (2.4ha) and a domestic container yard (0.46ha). an area of 16,402 m² is used for CFS. Number of ground slots and the capacity of the international yard are 594 and 2,574 TEU respectively. Number of ground slots and the capacity of the domestic yard are 152 and 548 TEU respectively.

Other than container vessel, general cargo vessels, bulk carriers and RORO vessels call at this terminal. Number of calling vessels amounts to 2,097 and cargo volume is 2,468,795 tons in 2008.

[Jamrud terminal]

Jamrud terminal is a multipurpose terminal located at the east area of the port. It is owned and managed by PELINDO III Tanjung Perak Brunch itself. This terminal has an area of 3.3ha and a quay of 2,210m in length and 9.5m in depth with an apron of 10-15m in width. Eleven warehouses of 41,096 m² in total and open storage area of 29,986m² are located here. A passenger terminal building is located at the south end of the terminal. Maximum accommodated vessel size is 30,000DWT.

Main cargo is general cargo transported by ocean-going and inter-islands vessels and many passengers from/to islands use this terminal. Number of calling vessels is 5,835 and cargo volume is 6,254,635 tons in 2008.

[Nilam terminal]



Nilam terminal is a multipurpose terminal, which is located between Berlian terminal and TPS terminal. It is owned and managed by PELINDO III Tanjung Perak Branch itself. This terminal has an area of 113,950 m² and a quay of 930m in length and 8-9m in depth with an apron of 15m in width. Four warehouses of 18,235 m² in total and open storage area of 14,125m² are located here. No crane is installed. Maximum accommodated vessel size is 30,000DWT.

General cargo, dry bulk and liquid bulk transported by inter-islands vessels are handled at this terminal. Number of calling vessels is 2,465 and cargo volume is 3,895,267 tons in 2008.

[Mirah terminal]

Mirah terminal is a multipurpose terminal which is located between Berlian terminal and Jamurud terminal. It is owned and managed by PELINDO III Tanjung Perak Branch itself. This terminal has area of 1.7 ha and a quay of 640m in length and 6.7m in depth with an apron of 20m in width. Four warehouses of 13,700 m² in total and open storage area of 15,965m² are located here.

General cargo transported by inter-islands vessels is handled mainly. Number of calling vessels is 1,982 and cargo volume is 535,492 tons in 2008.

[Kalimas Terminal]

Kalimas terminal is a conventional terminal located along the Kalimas river. It is owned and managed by PELINDO III Tanjung Perak Branch itself. This terminal has an area of 5.3 ha and a quay of 2,900m in length and 0.2-4m in depth.

General cargo transported by inter-islands vessels is handled mainly. Number of calling vessels is 3,016 and cargo volume is 623,033 tons in 2008.

(4) Landside Transportation

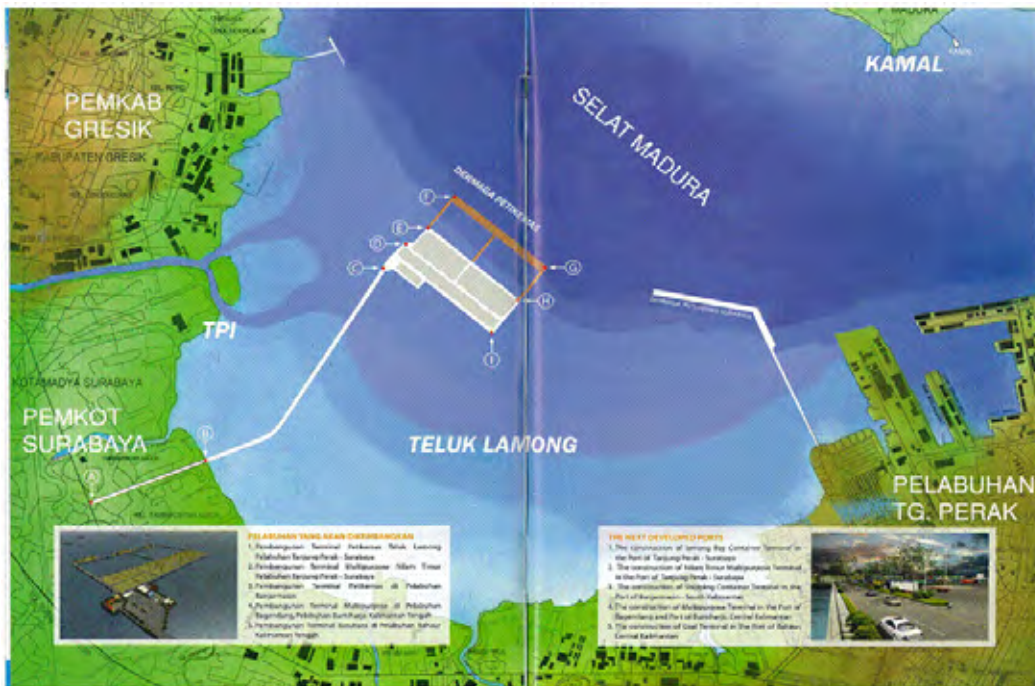
Entrance to a toll road is located 3 km from the port and the port is connected to its hinterland by this road.

Railway runs in the port and cargo can be transported from Berlian terminal using this public railway but it is rarely used due to poor facilities and operation.

(5) Future Plans

PELINDO III plans to develop a new multipurpose terminal at Lamong Bay which is west of the existing terminals and neighboring to TPS terminal.

The planned terminal is composed of a 1,280m-long and 40 m-wide quay, three 260m-long bridges connecting between a quay and a yard, container yard 1,280 m wide and 285m deep, CFS with area of 2,500m² and 2,800m-long causeway. Equipment such as four quay cranes, eight RTGs and twenty truck heads will be installed and an IT system will be introduced. Project cost is estimated as 2,551.5 billion IDR; 25.5 billion IDR for survey and acquisition of land, 1,903 billion IDR for infrastructures and 626 billion IDR for superstructures.



Source: PELINDO-III

Figure 3.7-3 Development Plan of New Terminal at Lamong Bay



3.8 Tanjung Emas Port

(1) Outline of the Port

(a) Location and Roles

Semarang is the capital of Central Java and the fifth largest city in Indonesia with a population of 1.5 million. Port of Tanjung Emas is located on the north coast of Semarang, at 06°57'S and 110°25'E, facing Java Sea.

Port of Tanjung Emas is an international port and the gateway to Central Java. It also plays an important role as a transit port to/from Kalimantan and Sulawesi.



Figure 3.8-1 Location of Tanjung Emas Port



Source: PELINDO III

Figure 3.8-2 Terminal Layout

(b) Operation and Management

Port of Tanjung Emas is under the management of PT (Persero) Pelabuhan Indonesia III (PELINDO-III), whose headquarters are located in Surabaya. The container terminal is operated by TPKS (Terminal Peti Kemas Semarang), one of the subsidiaries of PELINDO-III.



(2) Use of the port

(a) Cargo throughput

The annual cargo throughput, excluding containers, has been around 6 - 7 million tons in recent years at Port of Tanjung Emas. And the container throughput was 373,644 TEUs in 2008. Table 3.8-1 shows the annual cargo throughput at the port in 2008.

Table 3.8-1 Annual Cargo Throughput at the Port of Tanjung Emas

	General Cargo	Dry Bulk	Liquid Bulk	Ro-Ro	Total	Container (TEU)
International	191,717	361,515	240,271	-	793,503	-
Export	38,852	153,521	149,136	-	341,509	-
Import	152,865	207,994	91,135	-	451,994	-
Transshipment	-	-	-	167,564	167,564	-
Domestic	1,468,166	1,434,002	2,908,608	12,254	5,823,030	-
Loaded Containers	-	-	-	-	-	204,784
Unloaded Containers	-	-	-	-	-	168,860
Total	1,659,883	1,795,517	3,148,879	179,818	6,784,097	373,644

(b) Ship Calls

The annual number of ship calls was 16,255 in 2008. The details are shown in Table 3.8-2.

Table 3.8-2 Ship Calls at the Port of Tanjung Emas in 2008

	Total	Container Ship	Conventional Ship	Bulk Carrier	Tanker	Passenger Ship	Ro-Ro	Others
Foreign	706	576	54	8	63	5	0	0
Domestic	15,549	24	901	117	212	565	12,254	1,476
Total	16,255	600	955	125	275	570	12,254	1,476

(c) Port Procedures

Vessels should forward their initial estimated time of arrivals (ETA) to ADPEL, the harbor master, at least 24 hours prior to arrival.

(3) Port Facilities

(a) Waterway

i) Approach Channel

The length of the approach channel is 4 km, the width is 200 m. The minimum depth of the channel is 10m.

ii) Pilot

Pilot service is compulsory for vessels larger than 500 GT. There are two pilot boats in the port.



(b) Terminals

i) Outline

There are mainly five terminals owned by PELINDO III, and two private berths; Sriboga, a berth for a neighboring wheat mill factory, and Pusri, a berth for a neighboring fertilizer silos.

Table 3.8-3 Terminals at the Port of Tanjung Emas

Terminal	Application	Management	Quay	
			Length (m)	Depth (m)
Terminal Peti Kemas Semarang	Container	TPKS	495	10
Samudera	Multipurpose	PELINDO III	570	9
Domestic	Conventional		320	7
Ex Pltu	(Timber)		65	6
Crude Palm Oil Terminal	(CPO)		65	6
Sriboga	(Wheat)	Private	180	10
Pusri	(Fertilizer)			7

Source: Questionnaire

ii) Container Terminal

[Terminal Peti Kemas Semarang (TPKS)]

The container terminal is situated at the entrance of the port and operated by TPKS, one of the subsidiaries of PELINDO-III.

Container Throughput

The details of container throughput in 2007 and 2008 are shown in Table 3.8-4.

Table 3.8-4 Container Throughput at TPKS

Name of Network Port	TANJUNG EMAS SEMARANG			
Name of Terminal	TERMINAL PETIKEMAS SEMARANG (TPKS)			
Type of Terminal	Container Terminal			
Container Throughput	Year 2008		Year 2007	
	Total TEUs	373,644		385,095
Total Boxes	231,841		233,582	
Total Tonnage (tons)				
Landed Containers TEUs	Total TEUs	168,860	Total TEUs	178,934
	Laden TEUs	128,641	Laden TEUs	117,041
	Empty TEUs	40,219	Empty TEUs	61,893
Shipped Containers TEUs	Total TEUs	204,784	Total TEUs	206,161
	Laden TEUs	193,404	Laden TEUs	200,517
	Empty TEUs	11,380	Empty TEUs	5,644

Source: Questionnaire

Terminal Facilities

The terminal has 2 berths, a total quay length of 495 m, and the water depth is 10 m. The annual container handling capacity is 450,000 TEUs.

Five quay-side gantry cranes (lifting capacity: 35 tons and outreach: 36 m long) are installed. And 11 transfer cranes, 1 reach stacker and 2 top/side-loaders are used. The land of the container



terminal is owned by PELINDO-III, and the quay-side gantry cranes and other equipment are owned by TPKS.

The total area is 22 ha, and the area of 17 ha is used for the container yard. The number of ground slots is 6,659, the storage capacity for laden containers is 11,589TEUs and the storage capacity for empty containers is 336 TEUs. 96 reefer plugs are installed.

Operation

The gross productivity of the quay-side cranes is 24 moves/hour/crane, and the berth productivity is 41 moves/hour/berth. The berth occupancy ration is 36 %.

Stevedoring services are available 24 hours a day in three shifts, and there are 4 gates available around the clock.

(4) Landside Transportation

An access road with two lanes is available to the port 24 hours a day. Truck and trailers are used for the landside transportation. Railway is not applicable.



3.9 Banjarmasin Port

(1) Outline of the Port

(a) Location and Roles

The Port of Banjarmasin is a principal port of South Kalimantan, on the left bank of the Balito River, 20 miles upstream from its mouth ($0^{\circ} 43' 00''$ S and $110^{\circ} 41' 00''$ E). Main products of South Kalimantan are wooden ships, latin, latex, leather, coal and factories of export industries are located along the Balito River. The port is vital to these industries and the economic activities and daily lives of the people in South Kalimantan.

There are three public terminals which are operated as multipurpose terminal and conventional terminal. Other than the public terminals, several private terminals for exporting coal and plywood etc are located along the Balito River.



Figure 3.9-1 Location of Banjarmasin Port



Figure 3.9-2 Terminal Layout

(b) Operation and Management

Public terminals such as Trisakti terminal, Marutapura baru terminal and Bashiri terminal are owned and managed by Banjarmasin Port Branch of PELINDO III. Private terminals are constructed and operated by each company. PELINDO III is responsible for providing pilotage service to all vessels calling at these public and private terminals.

On the other hand, ADPEL administers the port area and is responsible for harbor master, port security and safe navigation.



(2) Use of the Port

(a) Cargo Throughput

Total cargo volume of the Port of Banjarmasin in 2008 is 38.6 million tons; export of 31.06 million tons, import of 2 thousand tons and domestic of 7.53 million tons. Container throughput amounts to 251,543 TEU all of which are domestic trade. Main commodities of container cargo are wood products, leather, charcoal etc.

Table 3.9-1 Cargo Volume of the Port of Banjarmasin (2008)

Cargo	(Unit: ton)					
	General	Dry Bulk	Liquid Bulk	Others	Total	Container(TEU)
Foreign	26,108	31,040,285	-	680	31,066,393	-
Export	24,200	31,040,285	-	-	31,064,485	-
Import	1,908	-	-	-	1,908	-
Domestic	1,087,982	6,439,920	6,143	680	7,534,725	251,543
Total	1,114,090	37,480,205	6,143	680	38,601,118	251,543

Source: Questionnaire

(b) Ship Calls

Number of calling vessels of the Port of Banjarmasin in 2008 amounts to 14,539; 4,109 of foreign flag and 10,430 of Indonesian flag. Numbers of vessel according to ship types are shown in the table below.

Table 3.9-2 Calling Vessel of the Port of Banjarmasin (2008)

	total	Container vessel	Conventional vessel	Bulk carrier	Tanker	Passenger vessel	RORO vessel	Others
Foreign	4,109	-	774	688	18	-	-	2,629
Domestic	10,430	811	1,956	1,204	334	581	99	5,445
Total	14,539	811	2,730	1,892	352	581	99	8,074

Source: Questionnaire

(c) Port Procedures

ADPEL which serves the harbor master is charged with giving permission of port entry to vessels. It takes one day for vessel to berth on average. On stop service for CIQ clearance and others at port has been introduced.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Vessels which enter the Port of Banjarmasin navigate the Balito River over approximately 20 miles from the mouth of the river, where a new channel with a length of 15,000m, a bottom width of 138m, a surface width of 162m and a depth of 6-8m LWS has been developed. Maximum accommodated vessel size is 13,000DWT and vessels can pass each other. The channel improvement project was implemented by a joint venture by PELINDO III, Province and private company(s). At present both coal vessels and ore vessels have to pay a channel fee to Province.

Mother vessels to which coal transported by barge along the Balito River is transhipped anchor near an outer buoy outside of the channel.

Tidal range is approximately 3m and there is no obstacle for air clearance. Maintenance dredging is not needed.



ii) Pilot

All foreign flag and Indonesian flag vessels which enter the port are required to be guided by pilot personnel who belong to Banjarmasin Port Branch of PELLINDO III. At present, 28 pilot personnel and two boats are used for pilotage.

(b) Terminals

There are three public terminals; Trisakti terminal, Marutapura Baru terminal and Bashiri terminal (under construction). Function, dimensions and usage conditions of each terminal are shown below:

Table 3.9-3 Terminals of the Port of Banjarmasin

Name of Terminal	Function	Owner Management	Length (m)	Calling Vessels	Cargo Volume (ton)
TRISAKTI(1-270)	Multipurpose	BJM-branch	270	3,712	6,851,434
(270-510)	Container	BJM-branch	240	2,069	5,743,460
(Coal)	Bulk	BJM-branch	-	-	-
(Cement)	Bulk	BJM-branch	-	-	-
(New Container)	Container	BJM-branch	240	-	-
MARTAPURA BARU	Conventional	BJM-branch	430	3,919	1,359,694
BASHIRI	Conventional	BJM-branch	250	1,593	105,490

BJM-branch : PELLINDO III BANJARMASIN Port Branch

Source: Questionnaire/Interview

[Trisakti Terminal]

Trisakti Terminal consists of a wharf of 1-270 section, a wharf of 270-510 section, a coal wharf, a cement wharf and a new container wharf, each of which is located in the order shown above from upstream of the Balito River. A wharf of 1-270 section is operated as a multipurpose wharf and that of 270-510 section is operated as a container wharf. Layout of these wharves is shown in Figure 3.9-3 Trisakti and Maruta Pura Baru terminal. The location and facility layout of Maruta Pura Terminal are shown in the Figure.

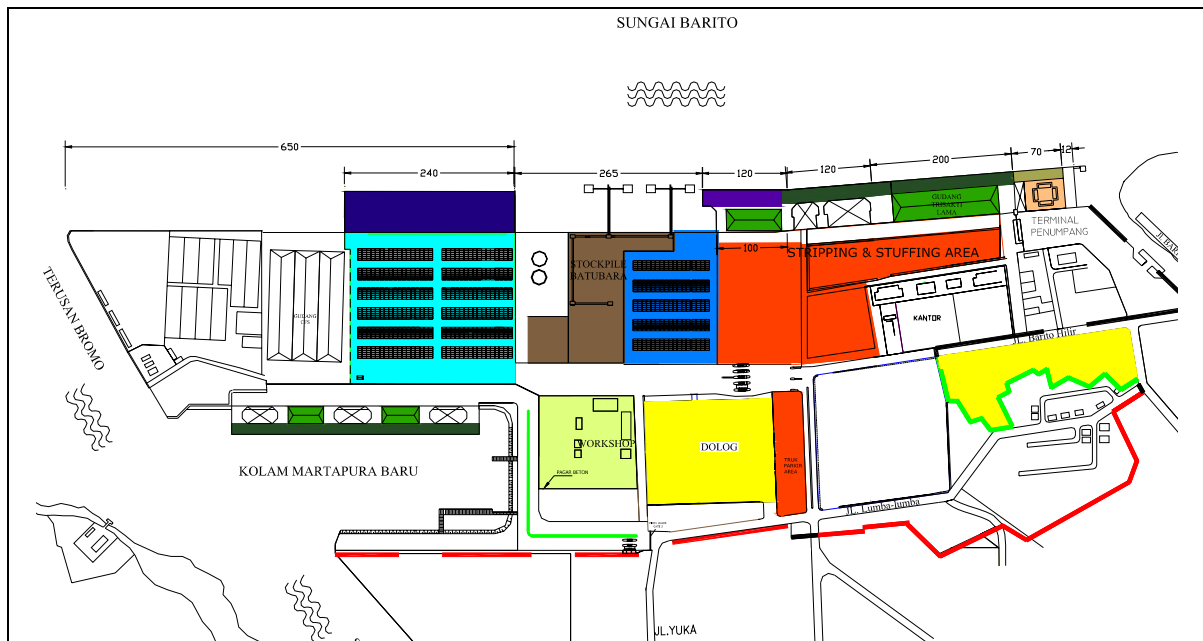


Figure 3.9-3 Trisakti and Maruta Pura Baru terminal

[Triksti Terminal (1-270)]

Triksti Terminal (1-270) is a multipurpose terminal located at the northern part of Trisakti terminal. It is owned and managed by PELINDO III Banjarmasin Port Branch itself. This wharf was constructed in 1991 and has a quay of 270m in length and 9m in depth. Warehouses and yards for storage of cargo and passenger terminal building are located in this wharf. Maximum accommodated vessel size is 13,000DWT.

Main commodities are general cargo, fertilizer, cement etc. A passenger vessel calls every day. Number of calling vessels is 3,712 including passenger vessels and cargo volume is 6,851,434 tons in 2008.

[Trisakti Terminal (270-510)]

Trisakti Terminal (270-510) was constructed as a multipurpose wharf but is now used as a wharf for container handling. It is owned and managed by PELINDO III Banjarmasin Port Branch itself.

Length of quay is 240m with a depth of 8m and a apron of 8m. A conventional type crane is installed at the quay. Areas for stacking, consolidation and stuffing containers are arranged in the terminal.

Total container throughput in 2007 and 2008 are 225,867TEU (213,586BOX) / 2,549,73 ton and 251,543TEU (234,222BOX) / 2,870,527 ton respectively; an increase of 11.3% over previous year. All containers are counted as domestic ones but some of them are transhipped at the Ports of Tanjung Perak or Tanjung Emas.

Table 3.9-4 Container throughput of the Port of Banjarmasin

Year	2008			2007		
	Total	Laden	Empty	Total	Laden	Empty
Landed Container	125,188	123,801	1,387	112,690	110,120	2,570
Shipped Container	126,355	65,016	61,339	113,177	57,248	55,929
Total	251,543	188,817	62,726	225,867	167,368	58,499

Source: Questionnaire



[Coal Wharf]

A coal wharf is located next to the wharf of Trisakti 270-510 section. Dolphins and handling equipment are owned by PELINDO III Banjarmasin Port Branch and leased to a private coal company. Two dolphins with a depth of 9m were constructed in 1997. Maximum accommodated vessel size is 7,000DWT. Two belt conveyor lines with a capacity of 350 tons/hour and a storage area of 4.5ha are arranged and the storage capacity is 30,000 to 50,000 tons. Cargo volume handled amounts to 1,438,849 tons in 2007, an increase of 53.4% over the previous year.

In July 2009, a new regulation prohibits coal transport within Banjarmasin city area was introduced and coal wharves located at the city including this wharf have to move out of the city area.

[Cement Wharf]

Cement wharf with a 58m-long quay is located next to a coal wharf. The land area is leased to a private company and the company operates the wharf with equipment and silo installed by the company.

[New Container Wharf]

A new container wharf with a length of 240m, two quay container cranes and a yard of 2.8ha has been constructed next to the cement wharf by PELINDO III Banjarmasin Port Branch and operation began in July 2009. The capacity is planned as 280,000 TEU per year and for the time being this wharf is operated together with the existing container wharf. It is operated by PELINDO III Banjarmasin Port Branch itself.

[Marutapura Baru Terminal]

Marutapura Baru terminal is located next to Trisakti terminal and used by conventional small vessels whose length is less than 50m. It is owned and managed by PELINDO III Banjarmasin Port Branch itself. This terminal consists of a quay with 350m in length, 5m in depth and 18m in width and a quay with 80m in length and 5m in width; warehouses are installed.

3,919 vessels used this terminal in 2008 and cargo of 1,359,694 tons is handled. Many vessels have to wait for berthing alongside another berthing vessel due to the shortage of berth length.

[Bashiri Terminal]

Bashiri terminal have a depth of 3m, a length of 250m and a width of 10m along the Marutapura river. It was planned for improving congestion of Marutapura Baru terminal. Construction work is currently being undertaken by PELINDO III Banjarasin Port Branch. 1,593 vessels used the terminal and cargo of 105,490 tons is handled in 2008 even during construction works.

(4) Landside Transportation

Cargo through the port is transported by trucks and there are no serious problems concerning road transportation. But the transport of coal causes problems from an environmental aspect and in fact it has become prohibited.

Coal is transported to the port by trucks from mining sites and conveyed by 10,000 class barge to mother vessels anchoring at the sea after stored and/or blended. In some cases, it is transported by barge to near regions



(5) Future Plans

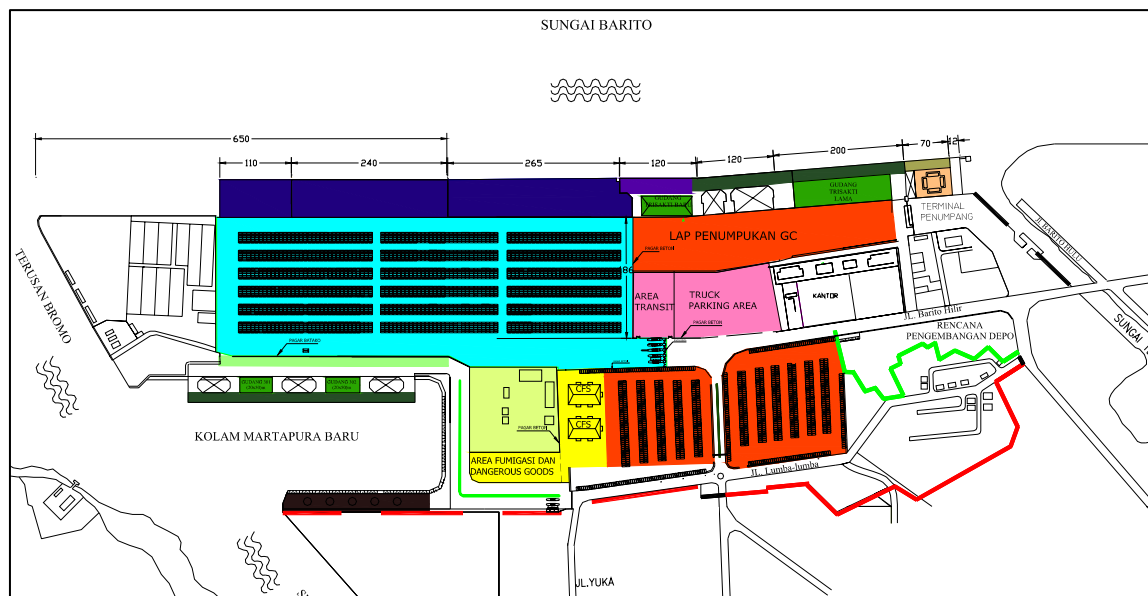
Container Terminal

PELINDO III has formulated a future plan up to 2013 for the Port of Banjarmasin. According to the plan, the layout of the present port will be rearranged and its container handling function will be enhanced. The new container terminal which opened in July 2009 represents the first stage of the plan.

Container terminal is planned based on the forecasted container throughput of 388,000 TEU in 2013 and the forecasted calling container vessels of 1,194. Existing coal wharf and cement wharf are replaced by container wharves and a modern container terminal will be developed together with the new container wharf. The quay provides four berths of 615m in length and four container quay cranes as well as a 10 ha container yard with a capacity of 440,000 TEU per year. 2,000m²-area CFS with the capacity of 250,000-ton/year and twenty four RTGs will be arranged.

The plan will be implemented according to a phased program; the capacity will be 312,412 TEU with a yard area of 72,680m² in 2009, 398,037 TEU with a yard area of 92,680m² in 2011 and 440,985 TEU with a yard area of 102,680m² in 2013.

In addition to expanding the container terminal, multipurpose wharves and an existing container wharf will be rearranged aiming at efficient use of the port area and functional enhancement of the port.



PELINDO-III

Figure 3.9-4 Development plan of the Port of Banjarmasin

Maharabang Coal terminal

PELINDO has a plan to construct a new coal terminal at Maharabang, 50 km upstream from Banjarmasin and construction of an access road to the terminal has been commenced. The project is prepared in response to the new regulation prohibiting the transport of coal through the city area; instead it will be transported to the new terminal from the mining sites. Coal will be transported to mother vessels by barge the same as at present. It is not decided whether Banjarmasin Branch would manage the terminal.



3.10 Makassar Port

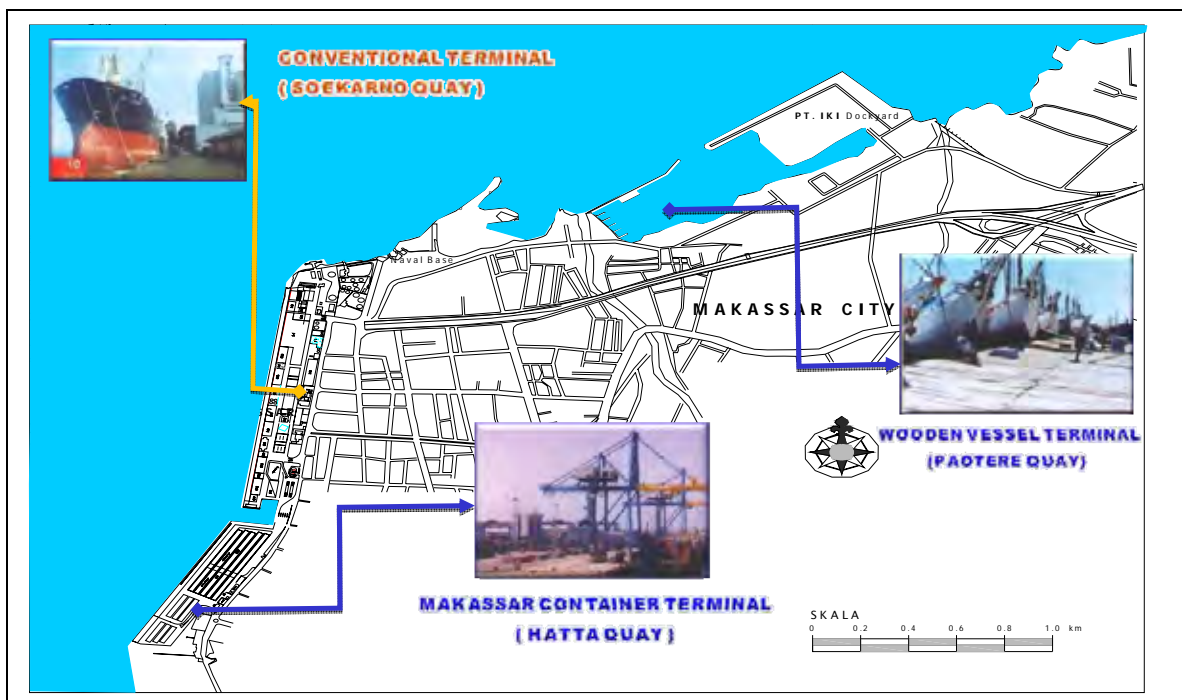
(1) Outline of the Port

(a) Location and Roles

Port of Makassar is located on the south-west of the Island of Sulawesi, at 05° 8'S and 119° 24'E, facing Makassar Strait. It is the main port for Makassar (Ujung Pandang), the capital of South Sulawesi Province, and the gateway to Sulawesi, Maluku and Papua.



Figure 3.10-1 Location of Makassar Port



Source: PELINDO IV

Figure 3.10-2 Terminal Layout

(b) Operation and Management

Port of Makassar is under the management of PT (Persero) Pelabuhan Indonesia IV (PELINDO-IV), whose headquarters are located in Makassar. The container terminal was formerly operated by a branch of PELINDO-IV, but from August 2008, it has been operated by TPM (Terminal Petikemas Makassar), one of the subsidiaries of PELINDO-IV.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo throughput at Port of Makassar has been around 8 - 10 million tons in recent years. Table 3.10-1 shows the annual cargo throughput at the port in 2008.



Table 3.10-1 Annual Cargo Throughput at the Port of Makassar

Unit: Metric tons					
General Cargo	Dry Bulk	Liquid Bulk	Container	Others	Total
1,358,403	1,496,816	1,843,281	4,112,166	1,336,716	10,147,382
(353,247 TEUs)					

Source: Answer to the Questionnaire

(b) Ship Calls

The annual number of ship calls was 5,216 in 2008. The details are shown in Table 3.10-2.

Table 3.10-2 Ship Calls at the Port of Makassar in 2008

	Total	Container Ship	Conventional Ship	Tanker	Passenger Ship	Others
Foreign	319	-	319	-	-	-
Domestic	4,897	681	3,251	286	571	108
Total	5,216	681	3,570	286	571	108

Source: Questionnaire

(c) Port Procedures

Vessels should forward their initial estimated time of arrivals (ETA) to ADPEL, the harbor master, at least 24 hours prior to arrival.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The length of the approach channel is 2 miles, the width is 150 m. The minimum depth of the channel is 16 m.

ii) Pilot

Pilot service is compulsory for vessels larger than 500 GT. Pilots board vessels just out of the breakwater, and it takes about two hours to reach the quays. There are seven pilots and three pilot boats in the port.

(b) Terminals

There are three terminals; a container terminal (TPM) with Hatta Quay, a conventional terminal with Soekarno Quay and a cabotage terminal called 'Wood Ship Port.'

Table 3.10-3 Terminals at the Port of Makassar

Terminal	Application	Management	Quay		Cargo Throughput in 2008 (ton)
			Length (m)	Depth (m)	
Terminal Petikemas Makassar	Container	TPM	850	12	4,099,671
Conventional	Multipurpose	PELINDO	1,360	9	5,668,773
Wood Ship Port	Cabotage	IV	510	3	378,938
Total			2,720		10,147,382

Source: Questionnaire

[Terminal Petikemas Makassar (TPM)]



Container Throughput

Container throughput in 2008 was 353,247 TEUs, an increase of 17 % compared to the throughput in 2007.

Table 3.10-4 Container Throughput at TPM

Name of Network Port	Makassar Port			
Name of Terminal	Makassar Container Terminal			
Type of Terminal	Container Terminal			
Container Throughput	Year 2008		Year 2007	
Total TEUs	353,247		302,023	
Total Boxes	320,269		282,559	
Total Tonnage (tons)	4,099,671		3,929,817	
Landed Containers TEUs	Total TEUs	177,822	Total TEUs	152,089
	Laden TEUs	169,666	Laden TEUs	148,082
	Empty TEUs	8,156	Empty TEUs	4,007
Imported Containers	Total TEUs	1,583	Total TEUs	1,647
	Laden TEUs	1,583	Laden TEUs	1,647
	Empty TEUs	-	Empty TEUs	-
Domestic Containers	Total TEUs	176,239	Total TEUs	150,442
	Laden TEUs	168,083	Laden TEUs	146,435
	Empty TEUs	8,156	Empty TEUs	4,007
Shipped Containers TEUs	Total TEUs	175,425	Total TEUs	149,934
	Laden TEUs	115,414	Laden TEUs	91,633
	Empty TEUs	60,011	Empty TEUs	58,301
Exported Containers	Total TEUs	15,286	Total TEUs	15,576
	Laden TEUs	15,286	Laden TEUs	15,576
	Empty TEUs	-	Empty TEUs	-
Domestic Containers	Total TEUs	160,139	Total TEUs	134,358
	Laden TEUs	100,128	Laden TEUs	76,057
	Empty TEUs	60,011	Empty TEUs	58,301

Source: Questionnaire

Facilities

The length of the quay (Hatta Quay) is 850 m, and the water depth is 12 m. The annual container handling capacity is 350,000 TEUs.

Five quay-side gantry cranes are installed. And ten transfer cranes, twenty-one reach stackers and one top-loader are used.

The total area is 12.6 ha, and the area of 11.5 ha is used for the container yard. The number of ground slots is 3,000, and thirty-six reefer plugs are installed.

Operation

The gross and net productivity of the quay-side cranes is 22.17 and 26 moves/hour/crane respectively. The berth productivity is 31.29 moves/hour/berth. The average container dwelling



days are 5 - 6 days, improved from 7 - 8 days formerly.

Stevedoring services are available 24 hours a day in three shifts. And there are 2 gates available 24 hours a day.

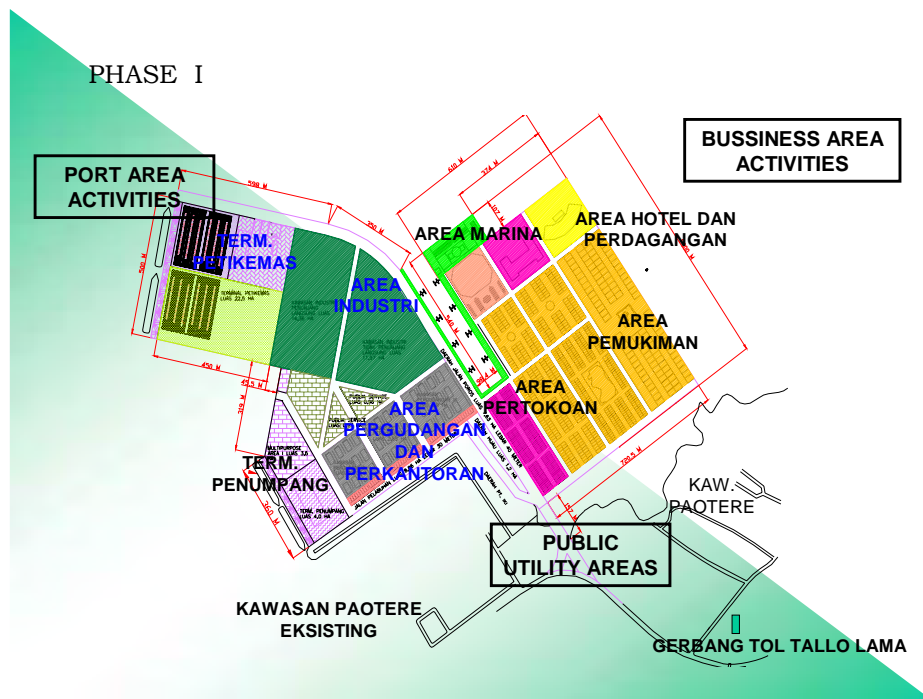
(4) Landside Transportation

An access road with one lane is available to the port 24 hours a day. The access road 1 km from the toll road. Truck and trailers are used for the landside transportation. Railway is not applicable.

(5) Future Plans

To deal with an increase in containers of more than 10 % annually, container handling capacity has been expanded through the extension of Hatta Quay (from 500 m to 850 m: +350 m) and enlarging the container yard (from 7.5 ha to 11.5 ha: +4 ha). Despite these measures, container throughput is forecasted to exceed its capacity in 2013 if container throughput increases steadily by 10 %.

To cope with this, PELINDO-IV and Makassar City Government are studying an urban complex development plan including a new container terminal. The phase 1 project will be commenced in 2010 and completed in 2013 if all goes smoothly.



Source: Port of Makassar

Figure 3.10-3 Urban Complex Development Plan



3.11 Balikpapan Port

(1) Outline of the Port

(a) Location and Roles

The Port of Balikpapan is a distribution center and a base of industry in East Kalimantan, which is located in Balikpapan Bay to the southeast of Balikpapan city ($1^{\circ} 17' 00''$ S and $116^{\circ} 48' 42''$ E). Main products of East Kalimantan are oil, coal and plywood. The port is indispensable to these industries and other economic activities.

There are two public terminals; Semayang terminal and Kampong Baru terminal. A new container terminal is planned at Kariangau.

In addition to these public terminals, several private terminals such as PURTAMINA oil terminal, PETROSI supply base, Balikpapan Coal Terminal, Chip-mill Terminal, MBA terminal, ITCT Plywood terminal and Singalose coal terminal are located in Balikpapan Bay.



Figure 3.11-1 Location of Balikpapan Port



Figure 3.11-2 Terminal Layout

(b) Operation and Management

Public terminals such as Semayang terminal and Kampong Baru terminal are owned and managed by Balikpapan Branch of PELINDO IV. Private terminals are constructed and operated by



each company. PELINDO IV is responsible for providing pilotage service to all vessels calling at these public and private terminals. On the other hand, ADPEL administers the port area and is responsible for harbor master, port security and safe navigation.

(2) Use of the Port

(a) Cargo Throughput

Total cargo volume of the Port of Balikpapan in 2008 is 53.38 million ton; export of 11.64 million tons, import of 5.13 million tons and domestic trade of 36.61 million tons. Container throughput amounts to 86,698 TEU all which are domestic trade.

Table 3.11-1 Cargo Volume of the Port of Balikpapan (2008)

Cargo	(Unit: ton)					
	General	Dry Bulk	Liquid Bulk	Others	Total	Container(TEU)
Foreign	12,034	8,265,230	8,261,234	237,929	16,776,427	—
Export	104	8,265,230	3,202,897	176,392	11,644,623	—
Import	11,930	-	5,058,337	61,537	5,131,804	—
Domestic	99,362	17,560,600	17,564,564	292,254	36,607,483	86,698
Total	111,396	25,825,830	25,825,798	530,183	53,383,910	86,698

Source: Questionnaire

(b) Ship Calls

Number of calling vessels of the Port of Balikpapan in 2008 amounts to 6,241; 1,450 of foreign flag and 4,791 of Indonesian flag. Numbers of vessel according to ship types are shown in the table below. The number of vessels which called at the public terminal is 1,541 and while 4,700 called at private terminals.

Table 3.11-2 Calling Vessel of Port of Balikpapan (2008)

	total	Container vessel	Conventional vessel	Bulk carrier	Tanker	Passenger vessel	RORO vessel	Others
Foreign	1,450	0	403	148	0	0	0	899
Domestic	4,791	45	827	110	1421	131	586	1,671
Total	6,241	45	1,230	258	1,421	131	586	2,570

note : Burge not included

Source: Questionnaire

(c) Port Procedures

ADPEL which is responsible for the harbor master is charged with giving permission of port entry to vessels. Port procedures require paper documentation.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Approach channel to the Port of Balikpapan is planned as a channel of 12 mile in length, 150m in width and 13m in depth. Part of the channel is only 12.6m in depth but dredging work is currently being implemented. Design vessel size is 35,000DWT (150,000DWT in half cargo) and vessels can pass each other in the channel. In case of PANAMAX size vessels, one vessel must wait for another vessel to pass through.

Navigation aids were installed and maintained by PURTAMINA whose terminal is located next to Semayang terminal.



ii) Pilot

All foreign flag and Indonesian flag vessels which enter the port are required to be guided by pilot personnel who belong to Balikpapan Port Branch of PELINDO IV. At present, 11 pilot personnel and three boats are used in pilotage. Previously, sea pilot personnel was aboard a vessel from the sea to the front of a terminal and harbor pilot personnel guided a vessel to a berth but now same pilot personnel guides a vessel throughout from the sea to a berth.

(b) Terminals

There are two public terminals; Semayang terminal and Kampong Baru terminal. Function, dimensions and usage conditions of each terminal are shown below:

Table 3.11-3 Terminals of the Port of Balikpapan

Name of Terminal	Function	Owner Management	Length (m)	Calling Vessels	Cargo Volume (ton)
SEMYANG	Multipurpose	BLP-brunch	489	-	-
KAMPUNG BARU	Conventional	BLP-brunch	-	-	-

BJM-branch : PELINDO IV BALIKPAPAN Branch
Source: Questionnaire/Interview

[Semayang Terminal]

Semyang terminal is a multipurpose terminal located on the left bank of the Balikpapan Bay. It has an area of 4.8ha and a quay of 489m in length and 13m in depth with an apron of 13m in width. Its land area is used by container yards (11,820m²) warehouses (2,450m²) and passenger terminal (2,500m²). Many types of vessels such as general cargo vessels, bulk carriers, RORO vessels and passenger vessels use this terminal. Number of calling vessels amounts to 6,241 and cargo volume is 35,876,688 ton in 2008.

Land areas are leased to three private operators and the quay in front of the leased land is used almost dedicatedly by each operator. Cargo is handled with ship gears or movable cranes owned by operators. Productivity of container handling is around 10 boxes per hour.

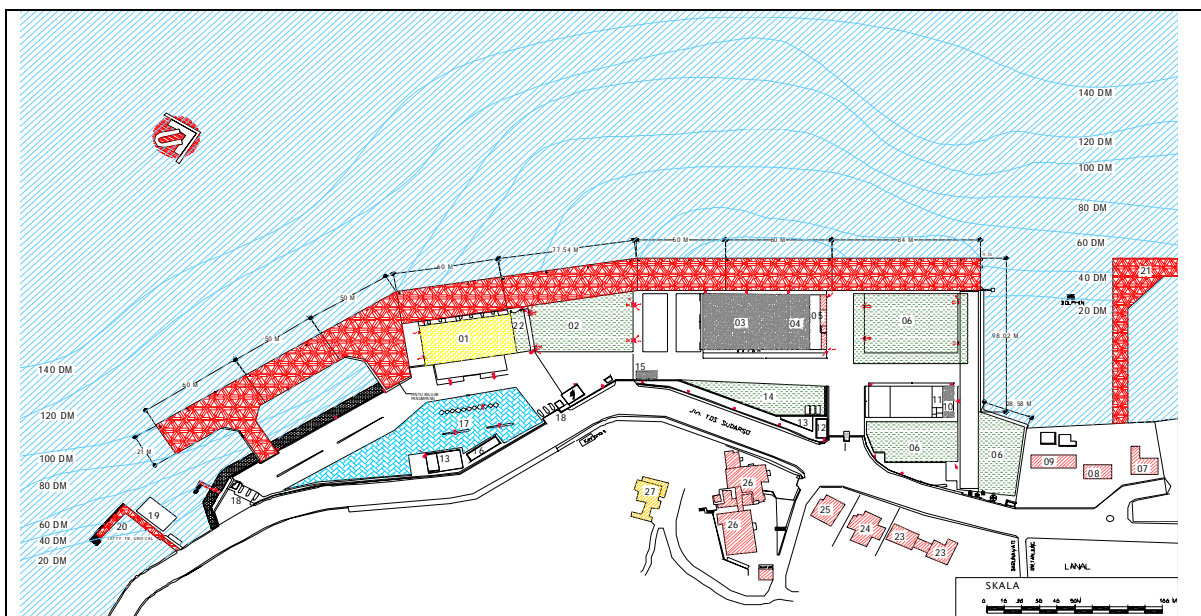


Figure 3.11-3 Semayang Terminal



[Kampung Baru Terminal]

Kampung Baru Terminal is a conventional terminal located to the north of Semayang terminal. This terminal, which has a quay length of 137m, a depth of 5m and an apron width of 8m, is used by small wood vessels.

(4) Hinterland Transport

Two-lane road runs along Semayang terminal and there are three gates for going from/to the terminal. The terminal is very narrow and transport within the terminal is not controlled well. It results in congestion at gates and hinders to smooth transport. On the other hand, logs for plywood factories and coal are transported by barge.

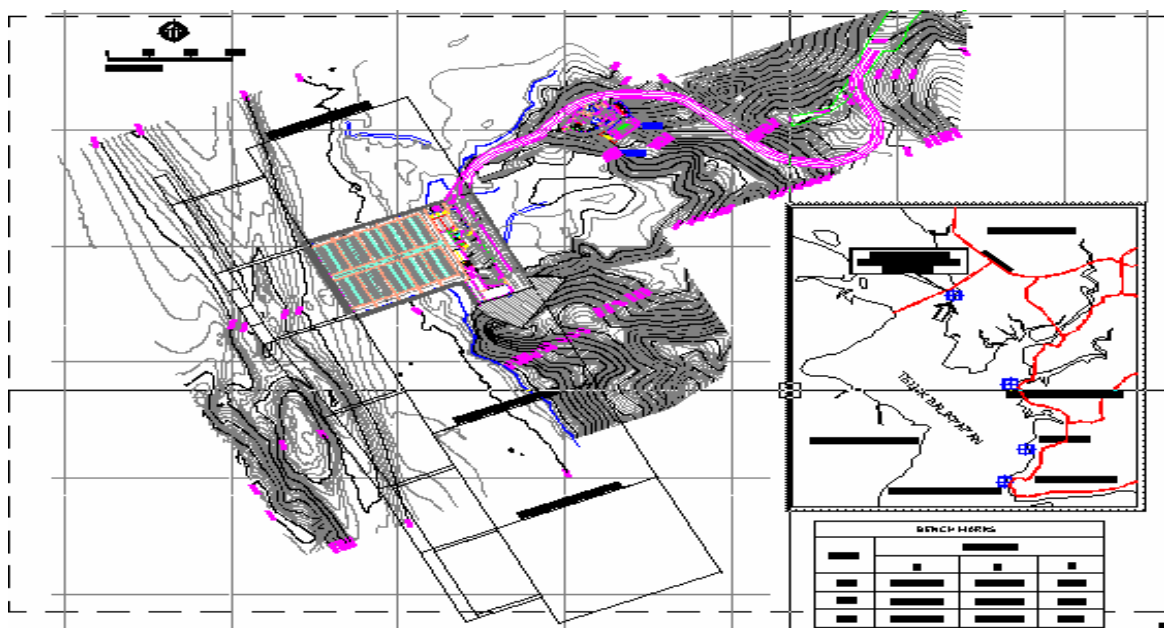
(5) Future Plans

Container Terminal

There is no container terminal and various types of cargo including containers are handled in a narrow area of Semayang terminal. On the other hand, container volume is estimated to increase in future. To cope with this situation, a new container terminal has been planned at Kariangau, north of Semayang terminal.

Container terminal has a 260m-long quay with a depth of 14m, width of 30m and two quay container cranes which is connected with container yard by two bridges. The container yard has an area of 56,000m² and 2,000 ground slots. CFS of 4,000m² and four transtainers are planned. Target year of the project is 2011 and work at the land area has started.

Project cost is estimated as 300 million Rs for infrastructure and 200 million Rs for super structure. Construction of infrastructure will be carried out by a joint venture of PELINDO IV, Province and City. PELINDO IV will serve the cost of installing superstructures and to operate the terminal.



Source : PELINDO Barikpapan Port Branch

Figure 3.11-4 Development Plan of New Container Terminal at Kariangau



3.12 Bitung Port

(1) Outline of the Port

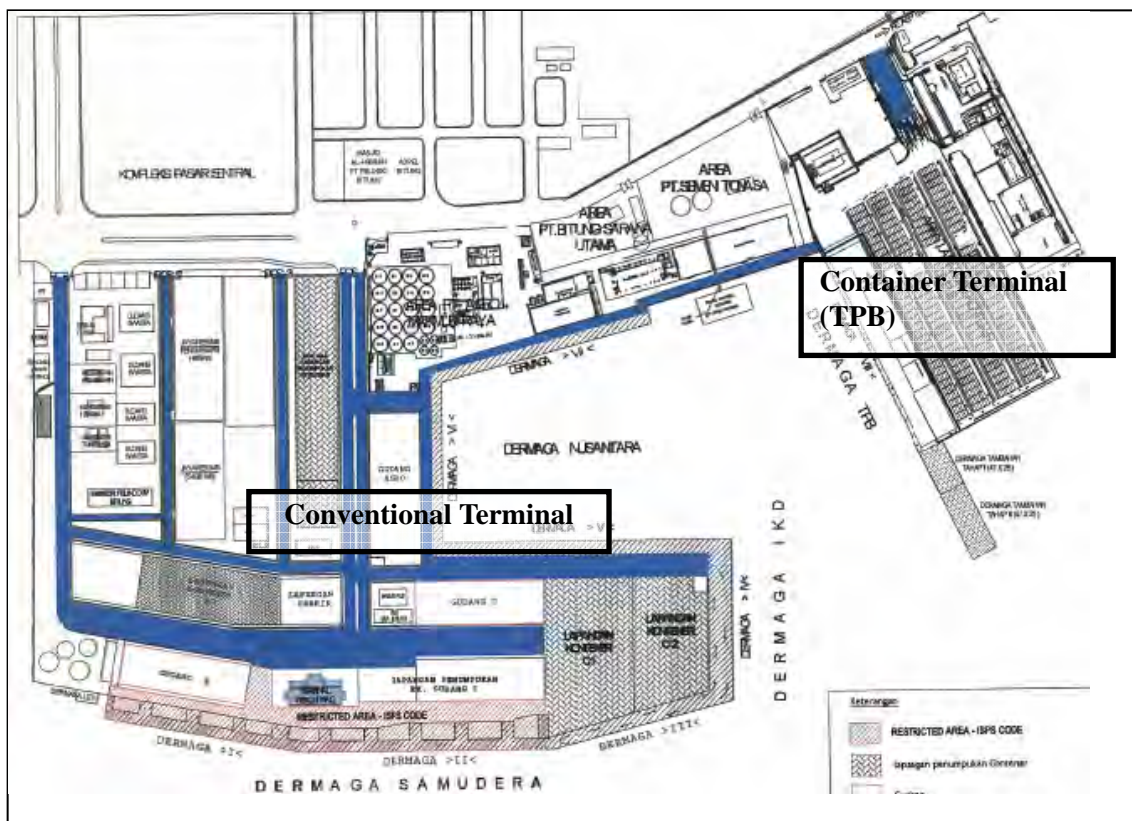
(a) Location and Roles

Port of Bitung is located at the north-east end of Sulawesi Island, at $01^{\circ} 26'N$ and $125^{\circ} 11'E$, approximately 45 km from Manado, the capital of North Sulawesi Province. The port is protected by Lembeh Strait which shields the port from storm and swell disturbances.

Port of Bitung is the main port for Manado and North Sulawesi Province. The port is expected to assume a role as a gateway between the Pacific area and Asia.



Figure 3.12-1 Location of Bintulu Port



Source: PELINDO IV

Figure 3.12-2 Terminal Layout

(b) Operation and Management

Port of Bitung is under the management of PT (Persero) Pelabuhan Indonesia IV (PELINDO-IV), whose headquarters are located in Makassar. The container terminal used to be operated directly by a branch of PELINDO-IV, but from May 2009, it has been operated by TPB (Terminal Petikemas Bitung), one of the subsidiaries of PELINDO-IV.



(2) Use of the Port

(a) Cargo Throughput

The annual cargo throughput at Port of Bitung has been around 3.5 - 4 million tons in recent years. Table 3.12-1 shows the annual cargo throughput at the port in 2008.

Table 3.12-1 Annual Cargo Throughput at the Port of Bitung

Unit: Metric tons

General Cargo	Dry Bulk	Liquid Bulk	Container	Others	Total
528,713	415,290	1,617,127	1,374,621	35,587	3,971,338
(134,756 TEUs)					

Source: Questionnaire

(b) Ship Calls

A total of 6,300 ships (209 international and 6,091 domestic ships) entered the port in 2008. The number of container vessels was 166.

(c) Port Procedures

Vessels should forward their initial estimated time of arrivals (ETA) to ADPEL, the harbor master, at least 24 hours prior to arrival.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The length of the approach channel is approximately 9 miles and the width is about 800 m. Vessels can approach from the north and south, but vessels over 1,000 DWT can only use the south channel, where the minimum depth is 16 m.

The tidal range is 1.8 m on average.

ii) Pilot

Pilot service is compulsory for vessels larger than 500 GT. There are five pilots and two pilot boats in the port.

(b) Terminals

There are mainly two terminals; one is a conventional terminal, having five berths, and the other is a container terminal, which began operation in January 2005.

Table 3.12-2 Terminals at the Port of Bitung

Terminal	Application	Management	Quay		Cargo Throughput in 2008 (ton)
			Length (m)	Depth (m)	
Terminal Petikemas Bitung	Container	TPB	292	10	762,325
Conventional	Multipurpose	PELINDO IV	1,410	9	3,209,013
Total			1,702		3,971,338

Source: Questionnaire



[Terminal Petikemas Bitung (TPB)]

Container Throughput

Container throughput in 2008 increased by 43 % compared to the throughput in 2007. This rapid increase of containers is caused by the policy to consolidate container handling to TPB.



Figure 3.12-3 Cargo Handling at TPB

Table 3.12-3 Container Throughput at TPB

Name of Network Port	Port of Bitung			
Name of Terminal	Bitung Container Terminal (TPB)			
Type of Terminal	Container Terminal			
Container Throughput	Year 2008		Year 2007	
	Total TEUs	80,053		55,623
Total Boxes	75,309		54,267	
Total Tonnage (tons)	762,325		499,107	
Landed Containers TEUs	Total TEUs	40.316	Total TEUs	27.498
	Laden TEUs	39.866	Laden TEUs	27.282
	Empty TEUs	450	Empty TEUs	216
Imported Containers	Total TEUs		Total TEUs	
	Laden TEUs		Laden TEUs	
	Empty TEUs		Empty TEUs	
Domestic Containers	Total TEUs	40.316	Total TEUs	27.498
	Laden TEUs	39.866	Laden TEUs	27.282
	Empty TEUs	450	Empty TEUs	216
Shipped Containers TEUs	Total TEUs	39.737	Total TEUs	28.125
	Laden TEUs	8.929	Laden TEUs	8.046
	Empty TEUs	30.808	Empty TEUs	20.079
Exported Containers	Total TEUs		Total TEUs	
	Laden TEUs		Laden TEUs	
	Empty TEUs		Empty TEUs	
Domestic Containers	Total TEUs	39.737	Total TEUs	28.125
	Laden TEUs	8.929	Laden TEUs	8.046
	Empty TEUs	30.808	Empty TEUs	20.079
Transshipment Ratio				

Source: Questionnaire



Facilities

The original length of the quay was 182 m. The 110 m extension of the Quay was completed in January 2009, and now the quay length is 292 m. This quay extension doubles the annual container handling capacity from 80,000 TEUs to 160,000 TEUs.

Two quay-side gantry cranes, 35.6 tons lifting capacity and applicable up to 11 rows, are installed. There are also two transfer cranes and two reach stackers.

The total area is 5 ha, and the area of 3 ha is used for the container yard. 48 reefer plugs are installed.

Operation

The net productivity of the quay-side cranes is 22 moves/hour/crane, and berth productivity is 40 moves/hour/berth. The berth occupancy ratio was around 70 % before the extension of the quay. After the extension of the quay berth congestion was reduced, and the berth occupancy ratio in May 2009 was 52.72 %.

(4) Landside Transportation

Terminals are connected directly to the main road. Truck and trailers are used for the landside transportation. Railway is not applicable. A toll road construction project from Bitung to Manado is now under planning, and the project will start in 2010 if all goes smoothly.

(5) Future Development Plan

Container throughput at the Port of Bitung is increasing annually by 30 %, and forecasted to be 200,000 TEUs in 2013. To handle the increasing containers, TPB expansion project is being carried out as the Phase 2 Project from 2007 to 2015. The funds for the construction are provided by PELINDO-IV.



Source: Port of Bitung

Figure 3.12-4 TPB Expansion Plan



3.13 Sorong Port

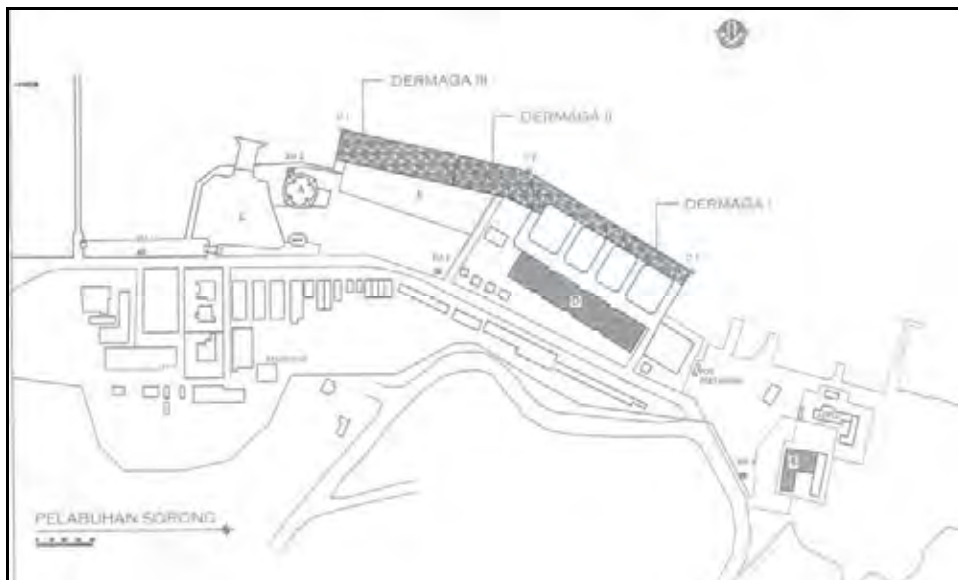
(1) Outline of the Port

(a) Location and Roles

Sorong Port is located in the westernmost area of West Papua Province. (00° 53' South, 131° 14' East)



Figure 3.13-1 Location of Sorong Port



Source: PELINDO-IV Sorong Branch

Figure 3.13-2 Layout of Terminals in Sorong Port

(b) Operation and Management

Sorong Port is managed and operated by the PT (Persero) Pelabuhan Indonesia IV (PELINDO-IV).

ADPEL, a local arm of the Directorate General Sea Transportation (DGST), is in charge of port entry clearance, port security, and maritime safety.



(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Sorong Port excluding Pertamina Jety in 2007 was 909,422 tons in total of which 63,073 tons was in containers (4,192TEUs).

(b) Ship Calls

The number of ships calling Sorong Port in 2007 was 3,556 in total, of which 368 were by passenger ships.

(c) Port Procedures

The port entry clearance is given by ADPEL which is in charge of harbor master's tasks.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channels of Sorong Port are the West Approach Channel and East Approach Channel. The West Approach Channel is 3 nm long, 500m wide and 20m deep. The East Approach Channel is 2 nm long, 100m wide, and 18m deep. West Approach Channel is mainly utilized as it offers a shorter route from the previous port and to the next port of the voyage for many ships.

The tidal range is 1.5m. No maintenance dredging is required.

Five anchorages are designated where the water depth is 15m to 20m. Four Anchorages are for a general cargo ships and container ships and one anchorage is for tankers.

ii) Pilot

Pilotage is compulsory for all of foreign and domestic ships of 1,000GT or over entering Sorong Port.

(b) Terminals

Sorong Port has one multipurpose terminal which consists of Wharf No.1 to No.3. An oil jetty dedicated to a government-owned corporation for oil and gas, Pertamina, is situated in the vicinity of the multipurpose terminal.

Table 3.13-1 Major Terminals in Sorong Port

Terminal Name	Function	Administrator	Quay Length (m)	Ship Call	Cargo Throughput (tons)
Wharf No.1,2,3	Multipurpose	PELINDO- IV	300	3,556	909,422

Note: Ship Call and Cargo Throughput in 2007

Source: Questionnaire

[Wharf No.1, 2, 3]

Outline

The terminal is owned and managed by PELINDO-IV.

Terminal Facilities

The quay of the terminal is 300m long in total (No.1: 140m, No.2: 80m, No.3: 80m) and 11m deep. Wharf No.1 was constructed in 1978 and Wharf No.2&3 were constructed in 1993. The terminal is equipped with 3 mobile cranes (lifting capacity: 25tons*2units, 40tons *1unit), a barge



crane (lifting capacity: 120tons), 1 reach stacker, and 5 top lifters. The terminal has an area of 40,000 sq.m of which 3,100 sq.m is for the container yard.

Operation

Wharf No.1, 2, and 3 each handle both container and non-container cargo. Major commodities are wood, rattan, cacao, building material, and cement. Passenger ships are accommodated at Wharf No.1.

(4) Landside Transportation

One-lane access road is linked to the main road. As the main road is narrow, container trucks are prohibited from passing through downtown in accordance with the agreement among PELINDO, ADPEL, and transport companies. In addition, there are no container depots. Therefore, all the containers are opened in the terminal.

(5) Future Plan

The terminal is currently being expanded eastward from the existing terminal. A quay with a length of 60m and the container yard with a width of 150m.



3.14 Jayapura Port

(1) Outline of the Port

(a) Location and Roles

Jayapura Port is located on the northern coast of the central area of New Guinea Island facing the Pacific Ocean. (02° 32' South, 140° 42' East) The port plays a role to support the economic activities in the capital of Papua Province, Jayapura city, and its surrounding area.



Figure 3.14-1 Location of Jayapura Port



Source: Courtesy of PELINDO Jayapura Branch

Figure 3.14-2 Layout of Terminals in Jayapura Port

(b) Operation and Management

Jayapura Port is managed and operated by PT (Persero) Pelabuhan Indonesia IV (PELINDO-IV).

ADPEL, a local arm of the Directorate General Sea Transportation (DGST), is in charge of port entry clearances, port security, and maritime safety.



(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Jayapura Port in 2008 is shown in the following table.

Table 3.14-1 Cargo Throughput of Jayapura Port in 2008

Container	Break Bulk incl. bag cargo	Liquid	Total	Container (TEU)
438,020	257,945	186,869	882,834	42,563

Source: Questionnaire

(b) Ship Calls

The number of ships calling Jayapura Port in 2008 is shown in the following table.

Table 3.14-2 Ship Call of Jayapura Port in 2008

Container	Conventional/Tanker	Passenger	Others	Total
73	311	126	58	568

Source: Questionnaire

(c) Port Procedures

The port entry clearance is given by ADPEL which is in charge of harbor master's tasks.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channel of Jayapura Port is 1.6 nm long, 500m wide and 27m deep.

The tidal range is 1.5m. No maintenance dredging is required.

Four anchorages are designated where the water depth is 30m to 50m.

ii) Pilot

Pilotage is compulsory for foreign ships of 3,600GT or over and domestic ships of 5,000GT or over entering Port.

(b) Terminals

Jayapura Port has one multipurpose terminal which consists of Wharf No.1 and No.2, and a small pier, APO. The function, size, and performances of those facilities are shown in the following table.

Table 3.14-3 Major Terminals in Jayapura Port

Terminal Name	Function	Administrator	Quay Length(m)	Ship Call	Cargo Throughput (ton)
Wharf No.1,2	Multipurpose	PELINDO- IV	214	510	882,834
APO	Mooring	PELINDO- IV	32	58	0
Total			246	568	882,834

Source: Questionnaire



[Wharf No.1,2]

Outline

The terminal is owned and managed by PELINDO-IV.

Terminal Facilities

The quay of the terminal is 214m long in total (No.1: 132m, No.2: 82m) and 12m deep. Wharf No.1 was constructed in 1950 and Wharf No.2 was constructed in 1994. The terminal is equipped with one mobile crane with a lifting capacity of 25tons. The terminal has a container yard with an area of 13,362 sq.m and warehouses with a total floor area of 2,200 sq.m.

Operation

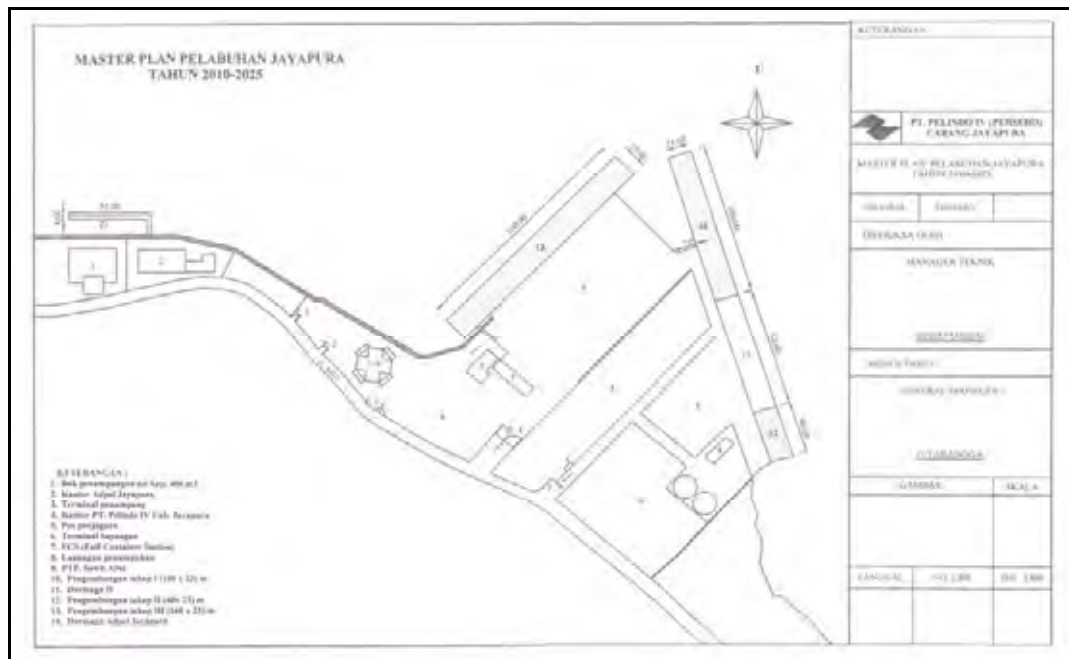
Break bulk cargo and passengers are mainly handled at Wharf No.1. Container and liquid cargo are mainly handled at Wharf No.2. Major commodities are cement, steel products, wood, rattan, cacao, and palm oil.

(4) Landside Transportation

One-lane access road links is linked to a main road.

(5) Future Plan

The number of ships calling Jayapura Port has been increasing and the existing quay length is not sufficient to cope with this trend. Passenger ships call the port regularly twice a week. When a passenger ship calls, as the passenger ship has first priority, cargo and containers are forced to give up the berth to the passenger ship. PELINDO-IV Jayapura Branch is planning to expand the quay and is currently the approval from PELINDO-IV headquarters. Figure 1.2-3 shows the master plan prepared by PELINDO-IV Jayapura Branch.



Source: PELINDO-IV Jayapura Branch

Figure 3.14-3 Master Plan of Jayapura Port



4. Malaysia

4.1 Port Klang

(1) Outline of the Port

(a) Location and Roles

Port Klang is located on the west coast of the Malay Peninsula and is 40km west of Kuala Lumpur. (02° 59'47" North, 101° 23'45" East) The port is the busiest port in Malaysia and a logistics center indispensable for its hinterland, i.e. the central region of Peninsular Malaysia. It also plays a strategic role as a tranship hub for the Southeast Asian region.

The port is linked to the Strait of Malacca via channels shielded by islands. The major terminals in Port Klang are located at two areas, i.e. the North Port and the West Port. In addition, another terminal exists at the South Point.



Figure 4.1-1 Location of Port Klang



Source: Port Klang Authority

Figure 4.1-2 Location of Terminals in Port Klang



(b) Operation and Management

Port Klang is administrated by the Port Klang Authority (PKA). PKA was established in 1963. Privatization has been implemented since 1986 and currently the North Port and the South Point are operated by Northport (Malaysia) Bhd (referred to as 'Northport' hereinafter) and the West Port is operated by Westports Malaysia Sdn Bhd (referred to as 'Westports' hereinafter). Westports has been granted the right to develop the remaining facilities planned in Port Master Plan 1990-2010 by itself. Private port facilities for cargo handling also exist in Port Klang as well as the pier for cruise ships owned by Star Cruises.

As a result of the privatization, PKA focuses on acting as a facilitator, regulator, and landlord. Currently, the major tasks of PKA are the promotions, planning, and development of the port, the oversight of privatized facilities and services in accordance with the regulations, management of free zones, and asset management.

The maintenance dredging at approach channels is the responsibility of PKA and the harbour dues are collected by PKA as financial resources for the dredging. Meanwhile, the maintenance dredging at the area within 50 meters along quays are the responsibilities of terminal operators.

(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Port Klang in 2008 was 152 million tons in total, of which 70 million tons was outward and 82 million tons was inward including transshipment.

The container throughput of Port Klang in 2008 was 7.97 million TEUs in total of which 1.60 million TEUs was outward, 1.63 million TEUs was inward, and 4.75 million TEUs was transshipment. The ratio of transship to the total is 60 percent.

Table 4.1-1 Cargo Throughput of Port Klang in 2008

	Container	Break Bulk	Dry Bulk	Liquid	Total	(unit: tons) Container (TEUs)
Outward	64,274,537	3,897,038	596,390	1,573,838	70,341,803	
Inward	65,882,106	5,175,334	6,904,770	4,044,497	82,006,707	
Total	130,156,643	9,072,372	7,501,160	5,618,335	152,348,510	7,973,117

Source: Questionnaire

(b) Ship Calls

The number of ships calling Port Klang in 2008 was 16,864 in total, of which 15,743 were foreign ship and 1,121 domestic ship.

Table 4.1-2 Ship Calls of Port Klang in 2008

	Total	Container	Conventional	Passenger	RORO	Others
Foreign	15,743	11,011	2,847	1,574	264	57
Domestic	1,121	690	244	179	2	6
Total	16,864	11,691	3,091	1,753	266	63

Source: Questionnaire

(c) Port Procedures

The pre-arrival notification to PKA is required when calling the port and the notification of dangerous cargo as well. The application for berthing, pilotage, and tug services is requested to be submitted to the terminal operator

The port entry clearances shall be requested to PKA, Marine Department of Ministry of



Transport, customs, immigration and quarantine. The online clearance is available except quarantine, but separate procedures are necessary because each online system is administrated separately.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channels of Port Klang are the North Approach Channel and the South Approach Channel. The North Approach Channel is 19km long, 365m wide and 12.3m deep currently, though the planned depth is 13.3m. The South Approach Channel is 8km long, 365m wide and 15m deep. The choice of approach channel to be navigated is depending on the ship operator’s preference.

The average tidal range is 5.8m. The annual maintenance dredging at the access channels amounts to 300 million cubic meters.

Two anchorages are designated in the water area near the North Approach Channel; Anchorage A (03 05’20.62” North, 10 19’38.065”) and Anchorage B (03 04’ 58.816” North, 101 19’51.726).

ii) Pilot

A compulsory pilotage area is designated in Port Klang and pilotage is compulsory in this area. The pilotage is provided by terminal operators. The pilots are licenced by PKA.

(b) Terminals

Port Klang consists of the North Port and the South Point operated by Northport and the West Port operated by Westports. In addition, there are other facilities owned by private sector. The function, size, and performances of them are as shown in the following table.

Table 4.1-3 Major Terminals in Port Klang

Terminal Name	Function	Administrator /Operator	Quay Length(m)	Ship Call	Cargo Throughput (ton)	Cargo Throughput (TEU)
The North Port incl. the South Point	Container	PKA /Northport	3,000	4,130	—	3,005,920
	Liquid		780	645	2,275,933	—
	Dry Bulk		426	142	1,616,260	—
	Break Bulk		1,286	1,103	3,915,971	—
The West Port	Container	PKA /Westports	3,200	6,140	—	4,967,197
	Liquid		1,365	818	13,312,326	—
	Dry Bulk		935	253	3,177,770	—
	Break Bulk		1,000	424	2,266,684	—
Others	Break Bulk				5,626,923	—
Total						7,973,117

Source: Questionnaire

200 thousand vehicles are handled in Port Klang.

<<The North Port (incl. the South Point)>>

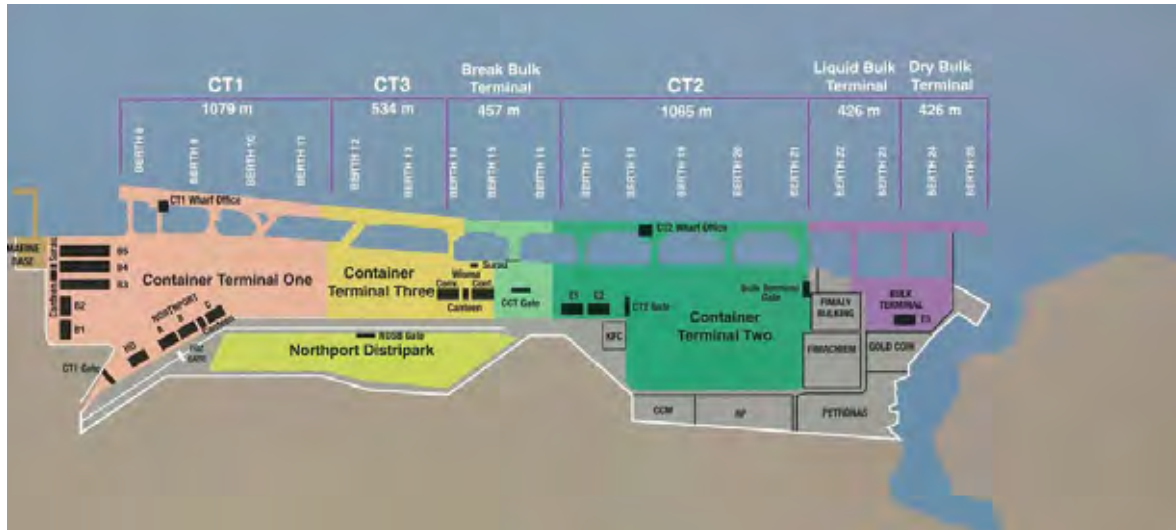
Outline

The North Port is located in the northern area in Port Klang and consists of terminals for container, liquid, dry bulk, and break bulk. Northport operates the terminals and implements the



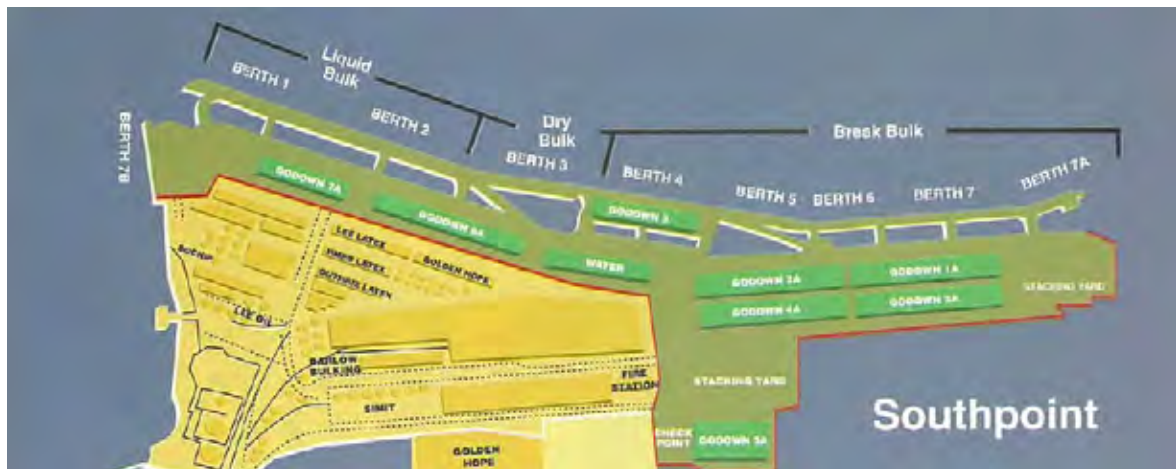
maintenance dredging of the berthing area within 50 meters along the quay. The volume of maintenance dredging amounts up to approx. 600 million cubic meters.

Northport also operates the facilities in the South Point. The South Point is located in the center of Port Klang and consists of terminals for liquid, dry bulk, and break bulk.



Source: Northport

Figure 4.1-3 Layout of the West Port



Source: Northport

Figure 4.1-4 Layout of the South Point

[Container Terminal]
Outline

Container terminal of the North Port consists of CT1, CT2, and CT3.

Container Throughput

Container throughput in 2008 was 3.0 million TEUs (52 million tons), an increase of 7.1% over the previous year.



Table 4.1-4 Container Throughput of Container Terminal in the North Port

(unit: TEUs)

	Total	2008		Total	2007	
		Laden	Empty		Laden	Empty
Inward (incl. Transship)	1,531,354	1,267,781	263,573	1,428,186	1,154,460	273,726
Outward (incl. Transship)	1,474,566	1,198,606	275,960	1,377,811	1,156,682	221,129
Total (incl. Transship)	3,005,920	2,466,387	539,533	2,805,997	2,311,142	494,855

Source: Questionnaire

Terminal Facilities

The container terminal of CT1, CT2, and CT3 has 12 berths in total. Its quay is 3,000m long and 11.5m to 15m deep and equipped with 27 quayside gantry cranes. The terminal has an area of 145ha with a cargo handling capacity of 4.9 million TEUs and is equipped with 19,319 ground slots and 757 reefer plugs.

The yards are operated with 40 straddle carriers in CT1 and 52 RTG in CT2. Five RTGs have already been commissioned.

Operation

Northport provides services as a terminal operator including berthing, stevedoring, stacking export containers, delivering import containers. The land of the container yard is owned by PKA and quayside cranes and yard equipment are owned and operated by Northport.

The gross productivity of the quayside crane is 25moves/hour/crane and the net productivity is 28.2moves/hour/crane. The berth productivity is 70moves/hour/berth.

The average ship turnover time is 13 hours while the average truck turnover time is 15 minutes.

The cargo handling services are provided 24 hours a day using 3 shifts. Three gates open for 24 hours.

Landside Transportation

The terminal is linked to the capital city of Kuala Lumpur and North-South Expressway which runs through Malaysia via each of two expressways: Federal Highway and North Klang Valley Expressway. Each road around the terminal or connecting to expressways has 4 lanes.

Railway is directly linked with the terminal and railway transportation services are provided by the railway company of KTM via North-South Railway through the country to Thailand in the north and to Singapore in the south.

The modal share of the container transportation by road to railway is 80 to 20.

A plan to improve transportation efficiency by double-tracking the existing single track line and separating cargo and passenger will be implemented in future.

[Break Bulk Terminal]

Outline

Break bulk terminals operated by Northport are located in the center of the North Port and in the South Point.

Facilities

The quay of the terminals has 8 berths and is 1,286m long and 5 to 10m deep.



The terminals have an area of 12.8ha of which 6.8ha is for the open yard.

Performance

The cargo throughput was 3.9 million tons in 2008. The major commodity is steel product. 977 general cargo ships called the terminal.

[Dry Bulk Terminal]

Outline

Dry bulk terminal operated by Northport is located in the northernmost part of the North Port.

Facilities

The quay of the terminal has 2 berths and is 426m long and 12m deep.

The terminals have an area of 3.1ha of which 1.2ha is for the open yard.

Performance

The cargo throughput was 1.6 million tons in 2008. The major commodities are cement and PKE.

147 dry bulk carriers called the terminal.

[Liquid Terminal]

Outline

Liquid terminals operated by Northport are located in the northern area of the North Port and in the South Point.

Facilities

The quay of the terminals has 4 berths and is 779.42m long and 11.5m deep.

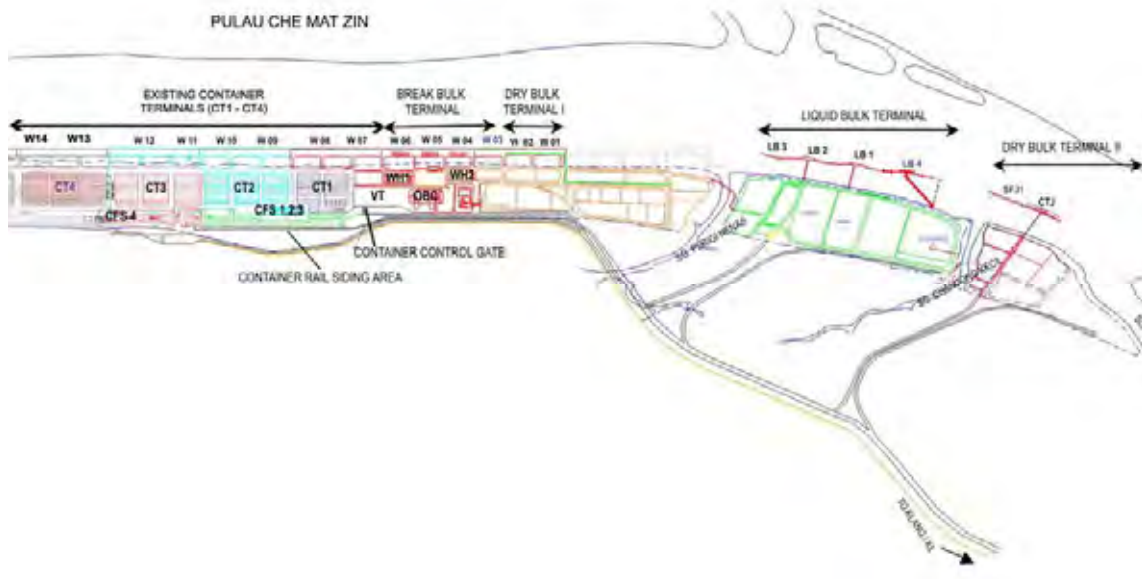
Performance

The cargo throughput was 2.3 million tons in 2008. 645 tankers called the terminal.

<<The West Port>>

Outline

The West Port is located in the western area in Port Klang and consists of terminals for container, liquid, dry bulk, and break bulk. Westports operates the terminals and implement the maintenance dredging of the berthing area within 50 meters along the quay. According to Westports, maintenance dredging is not a serious problem because the terminal is near the Strait of Mallaca.



Source : Website of Worthports

Figure 4.1-5 Layout of the West Port

[Container Terminal]

Outline

The container terminal operated by Westports is located in the western area of the West Port. 26 trunk line services and 30 feeder line services are provided at the terminal.

Container Throughput

Container throughput in 2008 was 4.9 million TEUs (77 million tons), an increase of 15% over the previous year.

Table 4.1-5 Container Throughput of Container Terminal in the West Port

	(unit: TEUs)					
	Total	2008		Total	2007	
		Laden	Empty		Laden	Empty
Inward (incl. Transship)	2,471,462	1,946,689	524,733	2,168,749	1,659,949	508,800
Outward (incl. Transship)	2,496,197	1,963,756	532,441	2,143,968	1,730,517	413,451
Total (incl. Transship)	4,967,659	3,910,445	1,057,174	4,312,717	3,390,466	922,251

Source: Questionnaire

Facilities

The container terminal of CT1, CT2, CT3, and CT4 has 11 berths in total. Its quay is 3,200 long and 15 to 16m deep and equipped with 34 quayside gantry cranes. The terminal has an area of 64.8ha with a cargo handling capacity of 7.2 million TEUs and is equipped with 25,036 ground slots and 1,236 reefer plugs.

The yards are operated with 92 RTG and 273 prime mover.

Operation

Westports provides services as a terminal operator including berthing, stevedoring, stacking export containers, delivering import containers. The land of container yard is owned by PKA and



quayside cranes and yard equipment are owned and operated by Westports.

The productivity of quayside crane is 35 moves/hour/crane. Westports posts 665 moves/hour/berth in vessel productivity and compete with terminals such as Shenzhen Yantain in China for the honor of being the fastest terminal in the world.

The cargo handling services are provided 24 hours a day using 3 shifts. 2 gates open for 24 hours.

Landside Transportation

The terminal is linked to the capital city of Kuala Lumpur and North-South Expressway which runs through Malaysia via Federal Highway. Each road around the terminal or connecting to expressways has 4 to 6 lanes.

Railway is directly linked with the terminal and railway transportation services are provided by the railway company of KTM via North-South Railway through the country to Thailand in the north and to Singapore in the south.

[Break Bulk Terminal]

Outline

Break bulk terminal operated by Westports is located in the center of the West Port.

Facilities

The quay of the terminals has 5 berths and is 1,000m long and 15m deep.

The terminals have an area of 4.0ha of which 0.2ha is for the open yard.

Performance

The cargo throughput was 2.2 million tons in 2008. The major commodity is timber, steel product and machinery.

209 general cargo ships called the terminal.

[Dry Bulk Terminal]

Outline

Dry bulk terminal operated by Westports are located in the center area (Dry Bulk Terminal 1) and the easternmost area (Dry Bulk Terminal 2) of the West Port.

Facilities

The quay of Dry Bulk Terminal 1 has 2 berths and is 400m long and 15m deep, and equipped with 2 grab unloaders and 2 units of conveyor belt.

The quay of Dry Bulk Terminal 2 has 1 berth and is 250m long and 14.5m deep, and equipped with 1 unloader and 1 unit of conveyor belt.

Performance

The cargo throughput was 3.2 million tons in 2008. The major commodities are grains and sugar for Dry Bulk Terminal 1 and fertilizer, clinker, and slag for Dry Bulk Terminal 2.

253 dry bulk carriers called the terminal.



[Liquid Terminal]

Outline

Liquid terminal operated by Westports is located in the eastern area of the West Port.

Facilities

The quay of the terminals has 4 berths and is 1,365m long and 10 to 16.5m deep.

Performance

The cargo throughput was 3.3 million tons in 2008. The major commodities are palm oil, chemicals, petroleum, and gas.

(4) Future Plans

Expansion Plan in the North Port

New berths are planned to be developed in the north part of the dry bulk terminal located in the northernmost area in the North Port.

Expansion Plan in the West Port

Container terminal is planned to be expanded to the west in the West Port



4.2 Penang Port

(1) Outline of the Port

(a) Location and Roles

Port of Penang is located along the north-west of Malay Peninsula, at $05^{\circ} 34'N$ and $100^{\circ} 12'E$, facing the Malacca Straits. The port is cast as one of the feeder ports for Port Klang, but plays important roles in the economic activities of northern Malaysia and in the international trade with southern Thailand, Myanmar and northern Sumatera.

Port of Penang was opened in Georgetown on Penang Island in 1786, but now the main port facilities are situated on the mainland.



Figure 4.2-1 Location of Penang Port



Source: Brochure of PPC

Figure 4.2-2 Terminal Layout

(b) Operation and Management

Port of Penang is under the management of Penang Port Commission (PPC), which serves as the port authority. PPC was established in January 1956 under the Penang Port Commission Act, 1955. PPC is a statutory body under the purview of the Ministry of Transport. As a statutory body,



PPC is responsible for the administration of the Port of Penang. Its responsibilities are to provide and maintain port and ferry services in the port as well as upgrading the development and the use of the port.

Since January 1994, the operations of the port has been privatized to Penang Port Sdn. Bhd. (PPSB) under the Ports Privatization Act 1990. PPSB is under the Ministry of Finance.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo throughput at Port of Penang has been around 26 - 27 million tons for the past couple of years. Table 4.2-1 shows the annual cargo throughput at the port in 2008.

Table 4.2-1 Annual Cargo Throughput at the Port of Penang

	Break Bulk	Dry Bulk	Liquid Bulk	Container	Total	Container (TEUs)
Shipped	855,433	350,369	603,480			492,160
Landed	699,409	2,799,520	3,600,795			437,479
TSR	-	-	-			(4.5%)
Total	1,554,842	3,149,889	4,204,275	17,090,890	25,999,896	929,639

Source: Questionnaire

(b) Ship Calls

The annual number of ship calls was 5,779 in 2008. The details are shown in Table 4.2-2.

Table 4.2-2 Ship Calls at the Port of Penang in 2008

	Total	Container	Conventional	Bulk Carrier	Tanker	Passenger	Others
Foreign	2,538	541	769	127	529	123	449
Domestic	3,241	883	100	22	494	703	1,039
Total	5,779	1,424	869	149	1,023	826	1,488

Source: Questionnaire

(c) Port Procedures

Permission to enter the port is under the control of the Marine Department, a harbor master, at the Ministry of Transport. Vessels should forward their initial estimated time of arrivals (ETA) to the Marine Department at least 2 days prior to arrival.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Two approach channels, the north channel and the south channel, are available. The north channel is the main channel; the length is 10 nautical miles, the width is 182 m, the water depth is 11 m, and the maximum vessel size is 60,000 DWT. Meanwhile, the length of the south channel is 8.5 nautical miles, the width is 160 m, the water depth is 5.8 m, and the maximum vessel size is 5,000 DWT.

The tidal range is 1.6 m on average. Maintenance dredging on the scale of 8 million cubic meters is conducted once in two or three years.



ii) Pilot

Pilot service is compulsory for vessels larger than 500 GT. Pilot services are offered by PPSB. There are 25 pilots and 5 pilot boats in the port.

(b) Terminals

There are four main terminals on Butterworth; North Butterworth Container Terminal (NBCT), Butterworth wharves, Vegetable Oil Terminal and Prai Bulk Cargo Terminal

Table 4.2-3 Terminals at the Port of Penang

Terminal	Application	Operator	Quay Length (m)	Ship-calls	Cargo Throughput in 2008 (FT)
North Butterworth Container Terminal (NBCT)	Container	PPSB	900	1,424	17,090,890 (929,639 TEUs)
Butterworth wharves	Multipurpose		1,046	876	1,554,842
Vegetable Oil Terminal	Liquid Bulk			1,023	4,202,275
Prai Bulk Cargo Terminal	Dry Bulk		786	149	3,149,889
Total			2,720	3,472	25,999,896

Source: Questionnaire

[North Butterworth Container Terminal (NBCT)]
Container Throughput

Container throughput in 2008 was 929,639 TEUs, an increase of 0.4 % compared to the throughput in 2007.

Table 4.2-4 Container Throughput at NBCT

Name of Network Port	Port Of Penang			
Name of Terminal	North Butterworth Container Terminal			
Type of Terminal	Container Terminal			
Container Throughput	Year 2008		Year 2007	
Total TEUs	929,639		925,991	
Total Boxes	671,264		670,103	
Total Tonnage (tons)	17,090,890		17,356,805	
Landed Containers TEUs	Total TEUs	437,479	Total TEUs	437,737
	Laden TEUs	311,011	Laden TEUs	275,143
	Empty TEUs	126,468	Empty TEUs	162,594
Shipped Containers TEUs	Total TEUs	492,160	Total TEUs	488,254
	Laden TEUs	452,780	Laden TEUs	451,019
	Empty TEUs	39,380	Empty TEUs	37,235
Transshipment Ratio	4.5%		3.0%	

Source: Questionnaire

Facilities

The terminal has 3 berths, a total quay length of 900 m, and the water depth is 12 m A.C.D. (Admiral Chart Datum). The annual container handling capacity is 990,000 TEUs.



Nine quay-side gantry cranes (40 tons lifting capacity and applicable from 13 to 18 rows) are installed. And 26 transfer cranes and 2 reach stackers are used.

The total area is 42 ha, and the area of 20 ha is used for the container yard. The number of ground slots is 4,400, the storage capacity for laden containers is 30,000 TEUs and the storage capacity for empty containers is 7,000 TEUs. 360 reefer plugs are installed.

Operation

The gross and net productivity of the quay-side gantry cranes are 18 and 23 moves/hour/crane respectively.

Stevedoring services are available 24 hours a day in three shifts. And there are 8 gates available around the clock.

[Butterworth Wharves]

At the Butterworth Wharves, containers and breakbulk used to be handled, but after the integration of container handling into NBCT, the Butterworth Wharves are now operated mainly as a breakbulk terminal.

Cargo Throughput

Cargo throughput in 2008 was 1,554,842 freight tons; the main commodities were palm oil, refined sugar, bagged rice and steel products.

The number of ship calls was 876 in 2008.

Facilities

The wharves have 4 berths, a total quay length of 715 m, and the water depth is 9 m A.C.D. The maximum vessel size is 66,000 DWT.

There are 4 warehouses with a total area of 11,287 square meters.

[Vegetable Oil Terminal]

The Vegetable Oil Terminal is adjoining the south side of the Butterworth Wharves, connected by pipelines with 98 storage tanks behind the terminal.

Cargo Throughput

Cargo throughput was 4,202,275 freight tons and the number of ship calls was 1,023 in 2008.

Facilities

The structural type of the terminal is dolphin, and the maximum water depth is 10 m.

[Prai Bulk Cargo Terminal]

Prai Bulk Cargo Terminal is situated at the south end of Butterworth. Bulk cargoes are handled at the terminal.

Cargo Throughput

Cargo throughput was 3,149,889 freight tons and the number of ship calls was 149 in 2008.

Facilities

The length of the terminal is 588 m, the water depth is 11 m and the maximum vessel size is 66,000 DWT. The terminal also has an inner berth (length: 154 m, water depth: 7.5 m) for small



ships and a dolphin (length: 44 m, water depth: 11 m) for hazardous cargoes like LPG.

(4) Landside Transportation

The port is connected by a good network of road and rail to its hinterland via the North-South Expressway from the Malaysia-Thailand border to the Malaysia-Singapore border. A 2.5 km railway track links the North Butterworth Container Terminal to the Butterworth railway station. Inland waterway is also used for the landside transportation. The ratio of road, rail and inland waterway is approximately 50 %: 30 %: 20 %.



4.3 Kuching Port

(1) Outline of the Port

(a) Location and Roles

Kuching Port is located approx. 17 mile upstream from the mouth of the Sarawak River and on the left bank of the river. (01° 33' 17" North, 110° 23' 40" East) The port is the core port of the Southern area of Sarawak State and located in Kuching, which is the capital of the state and has a population of 630 thousand. It plays an important role for supporting the economic development of the state which has a population of approx. 2.4 million (2006).



Figure 4.3-1 Location of Kuching Port



Figure 4.3-2 Terminal Layout

(b) Operation and Management

Kuching Port is a state port under Sarawak state government and administrated by the Kuching Port Authority (KPA) which was established in 1961 in accordance with Port Authority Ordinance of Sarawak.



(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Kuching Port in 2008 was 11.46 million tons in total: 2.14 million tons in exports and 5.41 million tons in imports, 0.10 million in transshipment, and 3.60 million tons of domestic cargo.

The container throughput of Kuching Port in 2008 was 291 thousand TEUs in total: 82.3 thousand TEUs in imports, 89.6 thousand TEUs in exports, 1.9 thousand TEUs in transshipment, and 117.2 thousand TEUs of domestic cargo.

Table 4.3-1 Cargo Throughput of Kuching Port in 2008

	(unit: tons)							
	Container	Break Bulk	Dry Bulk	Liquid	Others	Total	Container (TEUs)	Vehicles (units)
International	4,490,197	559,146	427,101	899,302	533,494	7,551,360	171,943	46,111
Export	1,289,303	224,238	95,871	203,484	295,742	2,140,588	82,335	1,395
Import	3,200,894	334,908	331,230	695,818	237,752	5,410,772	89,608	44,716
Trsnsship	67,660	3,672	0	0	0	104,374	1,872	449
Domestic	3,095,423	0	7,770	7,770	0	3,604,448	117,248	0
Total	7,653,280	562,818	434,871	434,871	533,494	11,460,182	291,063	46,560

Source: Questionnaire

(b) Ship Calls

The number of ships calling Kuching Port in 2008 was 1,694: 573 foreign ships and 1,121 domestic ships. No berth windows are specified in Kuching Port.

Table 4.3-2 Ship Call of Kuching Port in 2008

	Total	Container	Conventional	Bulk	Tanker	Passenger	RORO	Others
Foreign	573	167	181	56	119	9	40	1
Domestic	1,121	650	251	2	154	0	51	13
Total	1,694	817	432	58	273	9	91	14

Source: Questionnaire

(c) Port Procedures

The port entry clearances shall be requested to KPA which is in charge of the harbor master's task. The required period for clearance is approx. one day.

No one-stop services are provided for documentations relevant to customs, immigration, quarantine, and port and the documents should be submitted to the respective authorities.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channels of Kuching Port lies from the pilot station to Tanjung Po Lighthouse in the north of the river mouth of Sarawak River. The channel is restricted by two bars. The Outer Bar has a depth of 4.9m above chart datum and the Inner Bar has a depth of 4.2m above chart datum. The tonnage of the maximum navigable ship is 12,500DWT in dry bulk carrier and 20,000DWT in container ship.

The tidal range is 3.9m at Pending Terminal and 4.5m at Senari Terminal. Some ships have to wait for the tidal window. Siltation is not a serious problem.

The port has 4 anchorages and specifies the ship types allowed to anchor for respective anchorages



ii) Pilot

Pilotage is compulsory for tankers and provided by pilots belonging to the Marine Department of Sarawak state. Four to five pilots are stationed in Kuching Port on average.

iii) Tugboat Service

KPA is responsible for providing tug services and outsources the tasks to a private company.

(b) Terminals

Kuching Port consists of multipurpose terminals (Pending Terminal and Senari Terminal) and liquid terminals (Biawak Oil Terminal and Assar OGC Terminal). The function, size, and performances of them are as shown in the following table.

Table 4.3-3 Major Terminals in Kuching Port

Terminal Name	Function	Administrator	Quay Length(m)	Ship Call	Cargo Throughput (ton)
Pending	Multipurpose	KPA	613	383	1,271,446
Senari	Multipurpose	KPA	635	1,038	4,847,098
Biawak Oil No1	Liquid	KPA	48	4	0
Biawak Oil No2	Liquid	KPA	45	23	24,189
Assar OGC No.1	Liquid	KPA	30	153	721,349
Assar OGC No.2	Liquid	KPA	230	93	132,173
Total			1,601	1,694	6,996,255

Source: Questionnaire

[Pending Terminal]

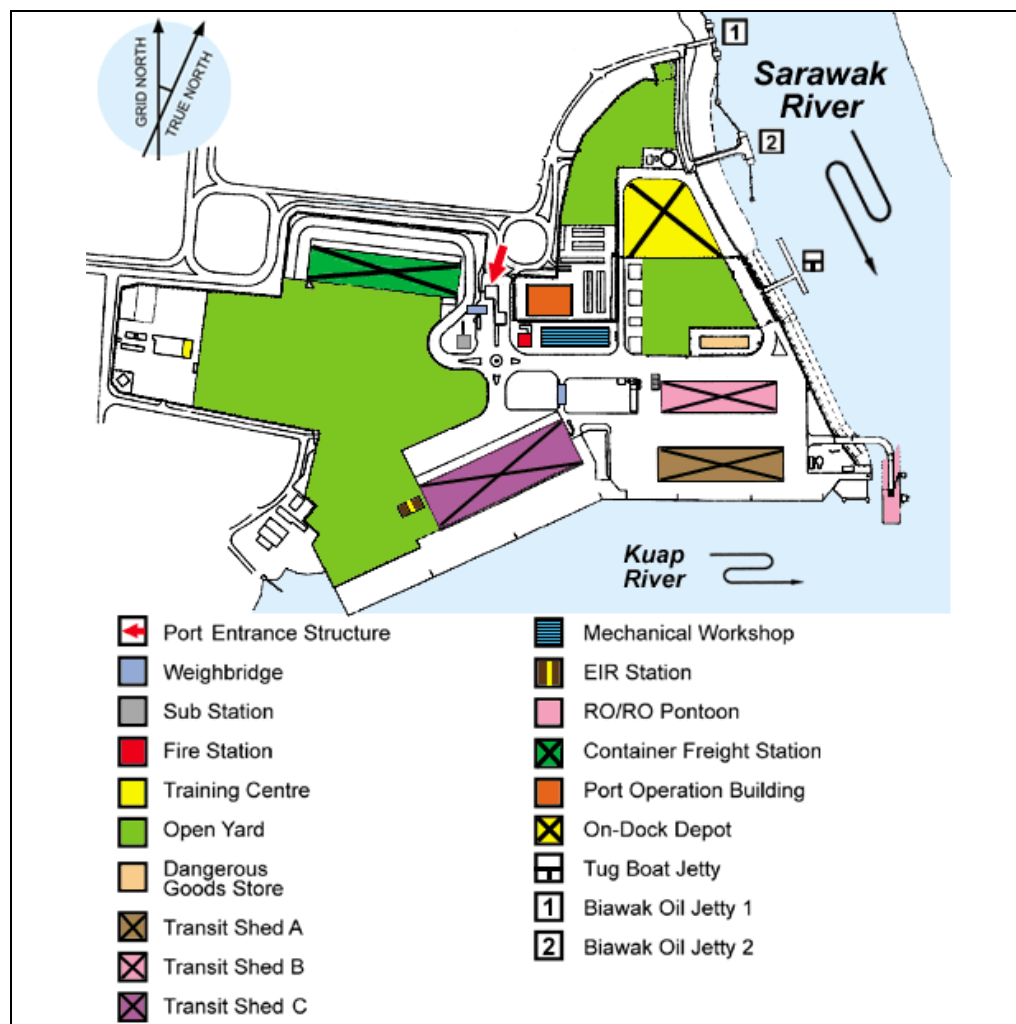
Outline

Pending Terminal is located 17 nm upstream from the river mouth of the Sarawak River. Conventional cargo and Ro/Ro are handled at the terminal by employees of KPA.

Facilities

The quay has a maximum depth of 8.5m and a total length of 613m and is equipped with two mobile cranes with a lifting capacity of 35tons. Maximum size ship that can be accommodated is 12,500 DWT. The terminal was built in two phases. Phase 1 was completed in 1974 and Phase2 in 1987.

The terminals have an area of 33ha in total of which 5.9ha is for the open yard and 4.2ha is for the vehicle yard. The total floor area of transit sheds is 3.4ha.



Source: KPA HP

Figure 4.3-3 Layout of Pending Terminal

Performance

The cargo throughput was 1.3 million tons in 2008 of which 327 thousand tons was break bulk and 944 thousand tons was other cargo. The major commodities are by-products of palm oil including PKE and PKS. Vehicles handled at the terminal includes new and used cars, buses, and construction equipment. Those vehicles are mainly transported from Port Klang and partly delivered to Sibu and Sabah State by land.

The total number of ship calls is 383: 208 conventional ships, 1 container ship, 91 vehicles carrier, and 83 other type ships.

Landside Transportation

A two-lane road is linked with the terminal and is available 24 hours a day. The distance to the neighboring main road is 1km. There are no railway links.

Documentation

A web-based EDI system developed by a local company is in operation and it can be used for ship entry.



[Senari Terminal]

Outline

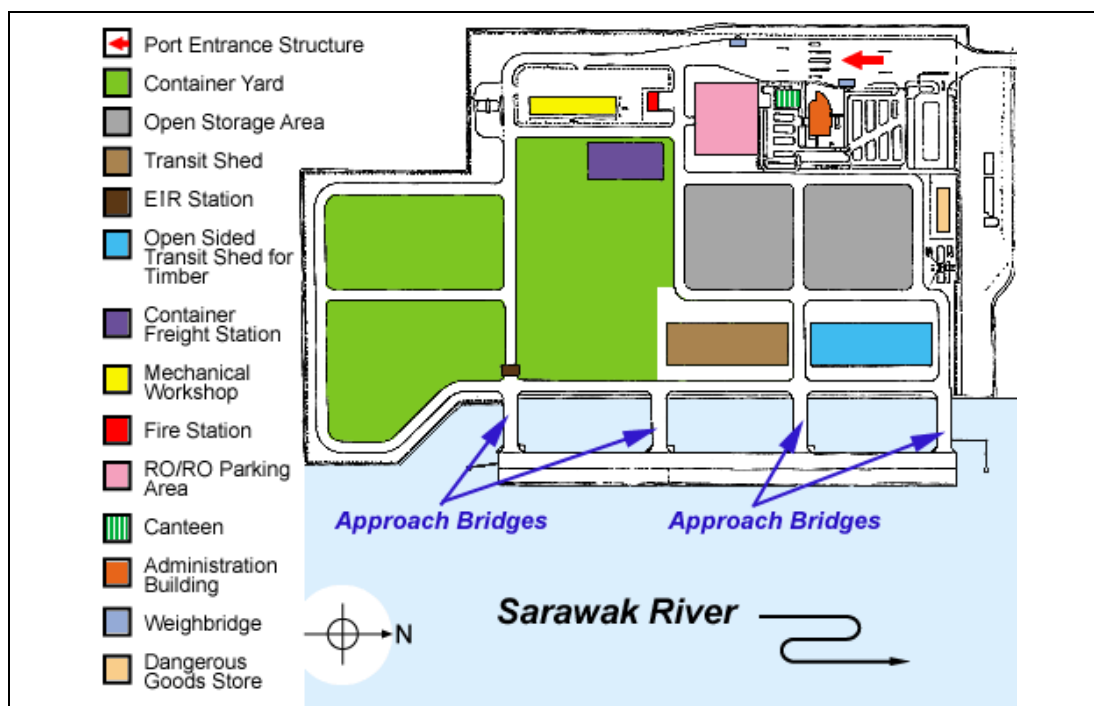
Senari Terminal is located 8nm upstream from the river mouth of the Sarawak River. Container and break bulk are handled at the terminal by employees of KPA.

Facilities

The quay has a maximum depth of 11m and a total length of 635m and is equipped with two quayside gantry cranes. Two new cranes are under installation.

The terminals have an area of 60ha in total of which 16ha is for the container yard, 4.5ha is for the open yard for break bulk cargo, 0.8ha is for the CFS, and 4.2ha is for the transit sheds

The container yard has 3,585 ground slots and 192 reefer plugs.



Source: KPA HP

Figure 4.3-4 Layout of Senari Terminal

Performance

The cargo throughput reached 4.8 million tons in 2008 of which 4.4 million tons (172 thousand TEUs) was container, 232 thousand tons was break bulk and 125 thousand tons was other cargo. The major commodities are consumer goods, timber, bulk wheat, and clay.

The total number of ship calls is 1,038 of which 211 were by conventional ship, 816 were by container ship, and 11 were by other types of vessels.

Landside Transportation

A two-lane road is linked with the terminal and is available 24 hours a day. The distance to a neighbor main road is 1km. There are no railway links.

Documentation

A web-based EDI system developed by a local company can be used to apply for ship entry.



[Biawak Oil Terminal]

Outline

Biawak Oil Terminal is a liquid terminal located next to Pending Terminal. KPA directly manages and operates the terminal. Petroleum and chemicals are handled at the terminal.

Facilities

The terminal has two jetties. One is No.1 Jetty (47.8m) and the other is No.2 Jetty (45m). The jetties were constructed in 1970. The liquid cargo is directly transported to consignees' tanks located near the port via pipes which are laid on the jetties and stored.

[Assar OGC Terminal]

Outline

Assar OGC Terminal is a liquid terminal located downstream next to Senari Terminal. KPA originally owned and operated the facility but transferred it to Assar Senari Port Sdn Bhd in 2005.

Facilities

The terminal has two jetties. No.1 Jetty is 11.6m deep, 160m long. The maximum size ship that can be accommodated at No.1 Jetty is 20,000DWT. Meanwhile, No.2 Jetty is 11.6m deep, 120m long. The maximum size ship that can be accommodated at No.2 Jetty is 8,000DWT. Both of the jetties were constructed in 2003.

(4) Landside Transportation

A two-lane road is linked with the terminal and is available 24 hours a day. The distance to the neighboring main road is 1km. There are no railway links.

The port is connected to a four-lane main road network at a point approx. 1km away from the port and linked to cities such as Sibul, Bitulul, and Miri.

(5) Future Plans

Tebedu Inland Port Development Plan

KPA plans to develop an inland port at Tebedu near the border crossing along the road linking between Kuching and Pontianak in West Kalimantan Province in Indonesia.

The development is approx. 70 percent completed. The cargo from Indonesia is planned to be loaded at Kuching Port as transshipment cargo via Tebedu Inland Port.



4.4 Bintulu Port

(1) Outline of the Port

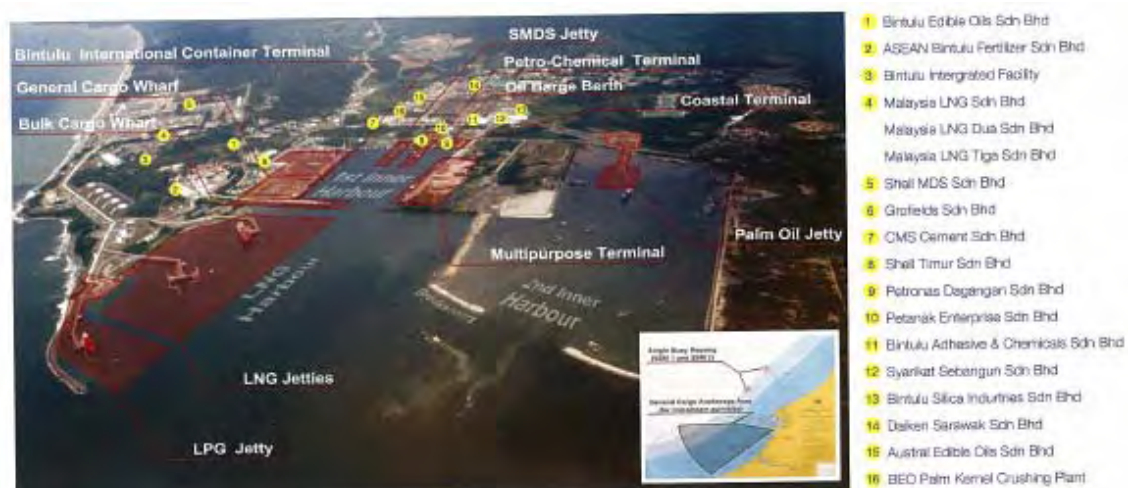
(a) Location and Roles

Port of Bintulu is located on the north-west coast of Sarawak, facing the South China Sea at 03°16'N and 113°04'E, approximately 20 km north of the city of Bintulu.

The port commenced its operations in January 1983, initially for the export of Liquefied Natural Gas (LNG). And now it is the biggest port in Sarawak, handling various cargoes of general cargo, liquid and dry bulk and containerized cargoes.



Figure 4.4-1 Location of Bintulu Port



Source: BPA

Figure 4.4-2 Terminal Layout

(b) Operation and Management

Port of Bintulu is under the jurisdiction of Bintulu Port Authority (BPA), established in August 1981 under the Bintulu Port Authority Act 1981. BPA is a federal statutory body under the purview of the Ministry of Transport. As a regulatory body, BPA is responsible for the overall supervision of all activities at the Port of Bintulu including the utilization of port facilities and operations by licensed operators, acts as trade facilitator, and is also responsible for planning and development of the port.

The port is operated by Bintulu Port Sdn. Bhd. (BPSB), a company set up in 1993 to take over all port facilities and services in the port as part of the government's policy on privatization.

(2) Use of the Port

(a) Cargo Throughput

Since the opening of the Port of Bintulu, the annual cargo throughput has been increasing steadily reaching 40 million tons in 2008 (see Table 4.4-1).



Table 4.4-1 Cargo Throughput of Bintulu Port in 2008

(Unit: Metric Ton)

	Break Bulk	Dry Bulk	Liquid Bulk	Container	Others	Total	Container (in TEUs)
International	1,604,647	1,587,928	27,253,093	966,102	1,066,429	32,478,199	73,513
Export	1,401,085	880,824	26,699,125	690,275	1,066,429	30,737,738	40,486
Import	203,562	707,104	553,968	275,827	0	1,740,461	33,027
T/S	-	-	-	840,141	-	840,141	49,031
Domestic	490,777	436,097	3,722,574	2,501,075	1,437	7,151,960	167,623
Total	2,095,424	2,024,025	30,975,667	4,307,318	1,067,866	40,470,300	290,167

Source: Questionnaire

(b) Ship Calls

The annual number of ship calls was 7,015 in 2008. The details are shown in Table 4.4-2.

Table 4.4-2 Ship Call of Kuching Port in 2008

	Total	Container Ship	Conventional Ship	Bulk Carrier	Tanker	Passenger Ship	Ro-Ro	Others
Foreign	2,130	126	748	197	604	-	-	455
Domestic	4,885	429	547	753	467	-	-	2,689
Total	7,015	555	1,295	950	1,071	-	-	3,144

Source: Questionnaire

(c) Port Procedures

Permission to enter the port is under the control of the Marine Department, a harbor master, at the Ministry of Transport. Vessels should forward their initial estimated time of arrivals (ETA) to the Marine Department at least 2 days prior to arrival.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Two approach channels, the north channel and the south channel, are available. The north channel is the main channel; the length is 5.6 km, the width is 240 m, the water depth is 16 m, and the maximum vessel size is 100,000 DWT. Meanwhile, the length of the south channel is 5.6 km, the width is 220 m, the water depth is 14 m, and the maximum vessel size is 60,000 DWT.

The tidal range is 1.4 m on average.

ii) Pilot

Pilotage is compulsory for all vessels of 25 meters length overall and above entering or leaving the port water limits. This service is offered by BPSB and available around the clock. There are 15 pilots and 4 pilot boats in the port.

(b) Terminals

There are 8 terminals at the port; LNG Terminal, LPG Terminal, Bulk Terminal, General Cargo Terminal, Container Terminal, Liquid Bulk Terminal, 950 meter Wharf and Palm Oil



Terminal.

Table 4.4-3 Terminals at the Port of Bintulu

Terminal	Application	Operator	Quay		Cargo Throughput in 2008 (million tons)
			Length (m)	Depth (m)	
LNG Terminal	LNG	BPSB	-	15.0	22.68
LPG Terminal	LPG		28	11.0	0.44
Bulk Terminal	Dry Bulk Liquid Bulk		270	13.5	0.49
General Cargo Terminal	General Cargo		515	10.5	2.46
Container Terminal	Container		450	14.0	4.31 (286,27 TEUs)
Liquid Bulk Terminal	Liquid Bulk		-	11.0	5.40
950 meter Wharf	Dry Bulk		950	14.0	-
Palm Oil Terminal	Palm Oil		786	14.0	1.94
Total				2,720	

Source: Questionnaire

[LNG Terminal]

Isolated from the area for general and bulk cargo berth, this terminal is located outside the 1st inner harbor. It is designed to accept vessels of 80,000 DWT with depth alongside of 15 m and is dedicated to the handling of large LNG tankers. It is comprised of three berths complete with loading arms dedicated to the handling of LNG connected by pipes to the LNG plants.

[LPG Jetty]

The jetty is located in the outer harbor immediately inside the outer breakwater. It is 28 m in length and 43 m wide with a depth alongside of 11 m. The jetty which was commissioned in 1988 is designed to accommodate vessels up to 51,000 DWT and it is linked directly by pipes to the Petronas plant.

[Bulk Terminal]

Situated on the west of the 1st inner harbor basin of the port with a berth length of 270 m and a depth alongside of 13.5 m, it can accommodate vessels of up to 60,000 DWT. It is connected to the ASEAN Bintulu Fertilizer plant by a conveyer system for urea export and by pipes for liquid ammonia exports.

[General cargo Terminal]

Located in the north of the 1st inner harbor basin, it is comprised of three general cargo berths of 515 m with a depth alongside of 10.5 m capable of accommodating vessels up to 25,000 DWT. These wharves are used for the handling of breakbulk cargoes. The general cargo wharves are also used for dry bulk and liquid bulk cargoes and thus essentially are multipurpose facilities.

[Container Terminal]

The container terminal is an extension of the existing 515 m general cargo berths at the inner harbor basin.

Container Throughput

Container throughput in 2008 was 286,270 TEUs, an increase of 15 % compared to the throughput in 2007.



Table 4.4-4 Container Throughput at Container Terminal

Name of Network Port	BINTULU			
Name of Terminal	BICT			
Type of Terminal	Container Terminal			
Container Throughput	Year 2008		Year 2007	
Total TEUs	290,167		251,800	
Total Boxes	226,491		203,986	
Total Tonnage (tons)	4,307,318		3,852,758	
Landed Containers TEUs	Total TEUs	142,117	Total TEUs	125,069
	Laden TEUs	90,339	Laden TEUs	82,947
	Empty TEUs	51,778	Empty TEUs	42,122
Imported Containers	Total TEUs	56,314	Total TEUs	45,388
	Laden TEUs	32,104	Laden TEUs	27,237
	Empty TEUs	24,210	Empty TEUs	18,151
Domestic Containers	Total TEUs	85,803	Total TEUs	79,681
	Laden TEUs	58,235	Laden TEUs	55,710
	Empty TEUs	27,568	Empty TEUs	23,971
Shipped Containers TEUs	Total TEUs	144,153	Total TEUs	124,784
	Laden TEUs	108,639	Laden TEUs	92,626
	Empty TEUs	35,514	Empty TEUs	32,158
Exported Containers	Total TEUs	66,230	Total TEUs	57,270
	Laden TEUs	51,367	Laden TEUs	42,657
	Empty TEUs	14,863	Empty TEUs	14,613
Domestic Containers	Total TEUs	77,923	Total TEUs	67,514
	Laden TEUs	57,272	Laden TEUs	49,969
	Empty TEUs	20,651	Empty TEUs	17,545

Source: Questionnaire

Facilities

The terminal has 2 berths, a total quay length of 450 m, and the water depth is 14 m. The annual container handling capacity is 400,000 TEUs.

Two quay-side gantry cranes (lifting capacity: 40.6 tons and outreach: 38 m) and one mobile cranes (lifting capacity: 100 tons) are installed. And 6 transfer cranes, 8 reach stackers and 2 top/side lifters are used.

The total area is 18 ha, of which 6.6 ha is used for the container yard. The number of ground slots is 2,088, and the storage capacity is 6,850 TEUs. 84 reefer plugs are installed.

Operation

The gross productivity of the quay-side gantry cranes are 20 moves/hour/crane.

Stevedoring services are available 24 hours a day in three shifts. And there is 1 gate available between 07:00 and 23:00 from Monday to Saturday and between 07:00 and 13:00 on Sunday.

[Liquid Bulk Terminal]

Liquid Bulk Terminal is located to the east of the 1st inner basin and is designated for



handling petroleum and chemicals by pipes which connect to the bulking installations on shore. It is comprised of a dual-faced jetty designated to handle 30,000 DWT vessels with a water depth alongside of 11 m and a back-up land area of 60 ha for bulking installations.

[950 meter Wharf]

The wharf is located to the south of the 1st inner basin, opposite the general cargo berth to the north. It is comprised of three berths with a depth alongside of 14 m capable of accommodating vessels up to 50,000 DWT. The wharf is used for the handling of dry bulk cargoes.

[Palm Oil Terminal]

A dedicated terminal for the handling of palm oil, it consists of 2 berthing facilities capable of handling vessel up to 50,000 DWT with 220 m LOA. The terminal is located at the 2nd Inner Harbor with a depth alongside of 14 m. It is connected by three pipelines to the bulking installations facilities.

(4) Landside Transportation

The port is connected by a good network road to its hinterland. An access road with 2 lanes is about 1 km from the trunk road and available 24 hours a day. Trucks and trailers are used for the landside transportation. Railway is not applicable.



4.5 Kota Kinabalu Port

(1) Outline of the Port

(a) Location and Roles

Kota Kinabalu Port is located on the west coast of Sabah State facing the South China Sea and in Kota Kinabalu (population: approx. 470 thousand), the capital city of Sabah State. (05° 59'45" North, 116° 04'50" East)

The port currently functions as a multipurpose terminal. The function for handling container has been transferred to Sapangar Bay Container Port (SBCP): a container terminal newly constructed in the Sapangar Bay and put into operation in 2008. Sapangar Bay Oil Terminal (SBOT) is located next to the container terminal.

Kota Kinabalu Port, SBCP, and SBOT act as a logistics center for the Western area of Sabah State.

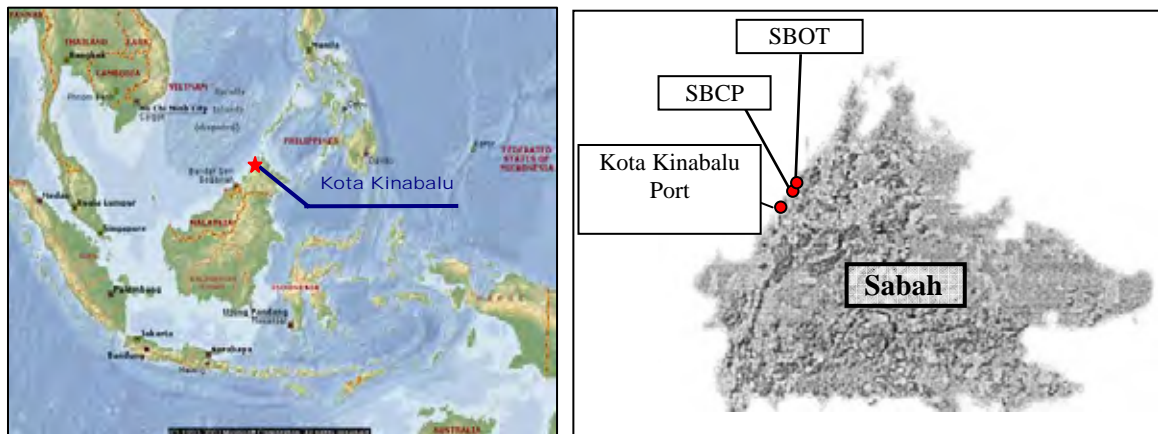


Figure 4.5-1 Location of Kota Kinabalu Port

(b) Operation and Management

Kota Kinabalu Port is a state port under the Sabah state government and administrated by Sabah Ports Authority (SPA) which was established in 1968 by the SPA Enactment which was repealed and replaced by the SPA Enactment 1981. This authority administrates all the state ports in Sabah including Kota Kinabalu Port, SBCP, SBOT, Sandakan Port, Tawau Port, Lahad Datu Port, Kunak Port, and Kudat Port. The operations of the state ports were privatized and transferred to a terminal operator of Sabah Ports Sdn. Bhd. (SPSB) in 2004. SPA currently administrates the state ports and acts as a landlord and regulator.

(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Kota Kinabalu Port, SBCP, and SBOT in 2008 was 6.76 million tons in total, of which 1.34 million tons was outward and 5.42 million tons was inward.

The container throughput in 2008 was 193 thousand TEUs in total of which 95.9 thousand TEUs was outward, 97.9 thousand TEUs was inward.

(b) Ship Calls

The number of ships calling Kota Kinabalu Port, SBCP, and SBOT in 2008 was 3,623 in total.



Table 4.5-1 Ship Calls of Kota Kinabalu Port in 2008

Total	Container	Conventional	Bulk	Tanker	Passenger	RORO	Others
3,623	1,279	265	29	401	39	55	1,555

Source: Questionnaire

(c) Port Procedures

No one-stop services are provided for documentation relevant to SPA, customs, immigration, quarantine, and Marine Department; the documents must be submitted to the respective authorities.

(3) Port Facilities

(a) Waterway

i) Pilot

Pilotage is not compulsory for ships entering Kota Kinabalu Port, SBCP, and SBO. Pilotage is provided by the Port & Harbour Department of Sabah State Government. Twenty-one pilots are available in Sabah State.

ii) Tugboat Service

Tug services are provided by a licenced private company.

(b) Terminals

[Kota Kinabalu Port]

Outline

Kota Kinabalu Port functions as a multipurpose terminal for handling break bulk and dry bulk cargo. The port currently does not serve for container as the function for handling container was transferred to SBCP in 2008.



Source: Sabah Ports Sdn Bhd

Figure 4.5-2 Terminal Layout of Kota Kinabalu Port

Facilities

The quay has 12 berths and a depth of 5 to 10m which can accommodate a maximum ship size of 16,000DWT. Its wharf has an open yard area of 2.6ha and warehouse floor area of 1.5 ha.

Performance

The cargo throughput in 2008 was 1.8 million tons of which 0.5 tons was outward and 1.3 million tons was inward. All the cargo is break bulk. The major commodities are timber, steel product, and fertilizer.

The total number of ship calls is 1,338 of which 265 were by conventional ship, 29 were by bulk carrier, and 55 were by Ro/Ro ship.



Others

The old ferry terminal located in the south part of Kota Kinabalu Port was renovated and converted to a new tourism spot for boading tourism boats with commercial facilities, named Jesselton Point, which started operation in 2006.

[Sapangar Bay Container Port (SBCP)]

Outline

SBCP is located approx. 10km northward and in the Sapangar Bay. SBCP started its tentative operation in 2007 and began full operation in 2008.

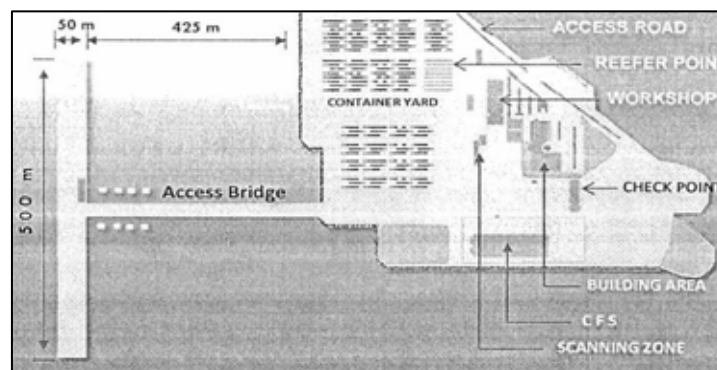
Container Throughput

SBCP had cargo throughput of 194 thousand TEU (2.2 million tons) in 2008 which represents 20 percent growth on a TEU basis compared to that handled by Kota Kinabalu Port and SBCP in previous year. Table 1.3-2 shows the sum of container Throughput of both ports. Currently only feeder services are provided with transshipment ports in Port Kalang, Tanjung Pelepas, and Bintulu.

Table 4.5-2 Container Throughput of Kota Kinabalu Port and SBCP in 2007 and 2008

	(unit: TEU)	
	2008	2007
Inward	97,933	71,797
Outward	95,921	90,961
Total	193,854	161,858

Source: Questionnaire (Part1)



Source: Sabah Ports Sdn Bhd

Figure 4.5-3 Terminal Layout of Sapangar Bay Container Port

Facilities

The quay of SBCP is detached pier structure and has two berths (one berth for each side of



the pier), a total length of 900m (500m outside+400m inside), and a depth of 12m being connected to land by a 500m-long access bridge. It has an annual handling capacity of 500 thousand TEUs and is equipped with three mobile harbor cranes. The ship to shore cargo handling for discharging is carried out by lifting a container onto quayside apron with a mobile harbor crane and then loading the container on a prime mover waiting on the apron with a straddle carrier. The prime mover transports the container to the container yard via the access bridge. The container yard has an area of 15ha and 2,600 ground slots. Discharged containers are handled with RTGs (3 units) and loaded containers are handled with straddle carriers in the container yard.

Operation

All of the cargo handling equipment are owned by SPSB and maintained by S.P. Satria Sdn.Bhd., a subsidiary company of SPSB.

Productivity of the mobile harbor crane is 13 to 15moves/hour/crane.

Landside Transportation

The main road is directly connected to SBCP. There are no railway links.

[Sapangar Bay Oil Terminal (SBOT)]

Outline

SBOT is located approx. 10km northward and in the Sapangar Bay. SBOT acts as a distribution center of petroleum and chemicals for the western area of Sabah state.



Source: Sabah Ports Sdn Bhd

Figure 4.5-4 Terminal Layout of Sapangar Bay Oil Terminal

Facilities

SBOT has one oil jetty with Outer and Inner berths which is 12m deep and serve for tankers with a maximum size of 30,000DWT. In the area next to SBOT, there are storage facilities owned by private companies including Shell, Esso, and Petronas. The jetty has loading arms, common-user pipe lines, and single-user pipelines on it.

Performance

The cargo throughput was 2.8 million tons in 2008 of which 0.5 million tons was outward and 2.3 million tons was inward. The major commodities are petroleum and chemicals.

The total number of ship calls was 1,645 of which 387 were by tanker.

(4) Future Plans

Kota Kinabalu Port

The former container yard to the north of Jesselton Point is planned to be converted for urban use. (Jesselton Waterfront City)



SBCP

The current yard operations with both RTGs and straddle carriers are planned to be unified into an operation with RTGs. The container cranes are also planned to be installed on the quay.

SBOT

Expansion is planned to accommodate larger tankers and provide bunkering and water supply.



4.6 Sandakan Port

(1) Outline of the Port

(a) Location and Roles

Sandakan Port is located in the northeastern area of Sabah State facing the Sulu Sea and in the western part of Sandakan City. (05° 48' North, 118° 04' East)

The port currently acts as a logistics center catering for economic activities in the northeastern area of Sabah: an exporting base for palm oil, palm related products, and plywood and a distribution center for petroleum.

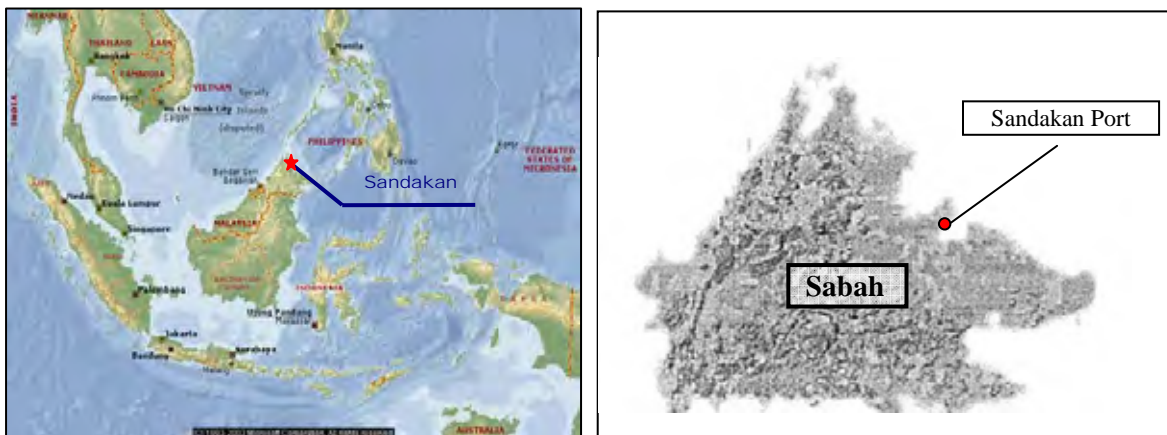


Figure 4.6-1 Location of Sandakan Port

(b) Operation and Management

Sandakan Port is a state port under the Sabah state government and administrated by Sabah Ports Authority (SPA) which was established in 1968 by the SPA Enactment which was repealed and replaced by the SPA Enactment 1981. The operations of the port were privatized and transferred to a terminal operator of Sabah Ports Sdn. Bhd. (SPSB) in 2004. SPA currently administrates the state ports and acts as a landlord and regulator.

(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Sandakan Port in 2008 was 9.91 million tons in total, of which 5.57 million tons was outward and 4.14 million tons was inward.

The container throughput in 2008 was 40 thousand TEUs in total.

(b) Ship Calls

The number of ships calling Sandakan Port in 2008 was 4,964 in total.

Table 4.6-1 Ship Calls of Sandakan Port in 2008

Total	Container	Conventional	Bulk	Tanker	Passenger	RORO	Others
4,964	164	399	70	466	173	0	3,692

Source: Questionnaire

(c) Port Procedures

No one-stop services are provided for documentations relevant to SPA, customs, immigration,



quarantine, and Marine Department; documents must be submitted to the respective authorities.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channels of Sandakan Port lie in the east and the west parts of Berhala Island which is situated at the mouth of the Sandakan Harbor. The western channel is shallower and has a minimum depth of 7.3m. The average tidal range is 2.4m. No maintenance dredging has been implemented so far.

ii) Pilot

Pilotage is not compulsory for ships entering Sandakan Port. Pilotage is provided by Port & Harbour Department of Sabah State Government. Twenty-one pilots are available in Sabah State

iii) Tugboat Service

Tug services are provided by a licenced private company.

(b) Terminals

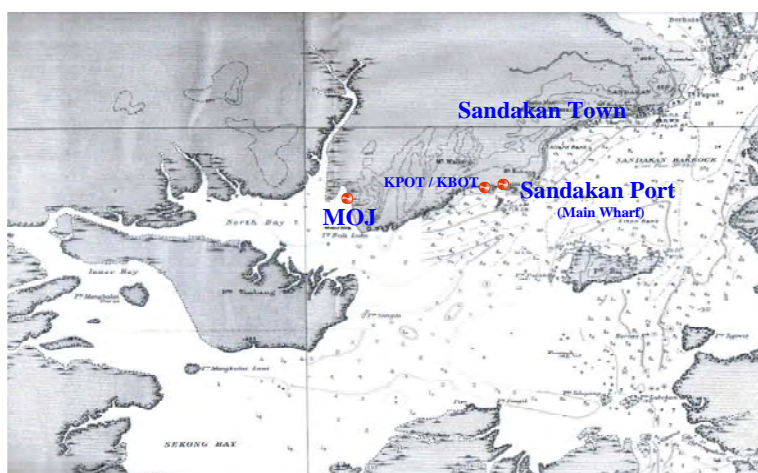
Sandakan Port consists of the Main Wharf, Karamunting Palm Oil Terminal (KPOT), Karamunting Bulk Oil Terminal (KBOT), and Sungai Mowtas Oil Jetty (SMOJ).

In addition, Sandakan Port has many private port facilities including a very primitive facility which is merely a barge fixed on the shore and used for a landing stage.

Table 4.6-2 Major Terminals in Sandakan Port

Terminal Name	Function	Administrator	Quay Length(m)
Main Wharf	Multipurpose	SPSB	575
KPOT	Liquid	SPSB	330
KBOT	Liquid	SPSB	170
SMOJ	Liquid	SPSB	170

Source: Questionnaire and Presentation by SPSB



Source: Sabah Ports Sdn Bhd

Figure 4.6-2 Location of Terminals in Sandakan Port



[Main Wharf]

Outline

Main Wharf is located in the eastern area of Sandakan Port and act as a multipurpose terminal handling container, breakbulk, dry bulk, and Ferry. Main Wharf is an rectangular-shaped island pier with quays on 4 sides and a warehouse on it and linked to the land via two access bridges. On the land side, The Wharf has container yard, a warehouse, a maintenance shop, and etc. The wharf was constructed in 1970.



Source: Sabah Ports Sdn Bhd

Figure 4.6-3 Main Wharf

Facilities

The quay has 5 berths and a depth of 6 to 11m. Maximum size ship that can be accommodated is 20,000 DWT. The quay is equipped with a mobile harbor crane.

The wharf has a container yard with 509 TEU ground slots, an open yard for non-container cargo with an area of 0.6ha, and warehouses with a total floor area of 1.3ha.

Performance

The cargo throughput was 0.9 million tons in 2008. The major commodities are steel product, construction equipment, fertilizer, rice, and sugar in break bulk cargo, and fertilizer and PKE in dry bulk cargo. Some rice and sugar are transshipped to the Sulu Islands in the Philippines. 328 feeder ships transported rice of 120 thousand tons and sugar of 30 thousand tons. The warehouse on the pier is used for transshipment cargo.

Others

Ferry services are provided between Zamboanga in the Philippines and Sandakan. The service frequency is twice a week. The volume of passengers in 2008 reached 56 thousand persons in total of which 30 thousand persons were inward and 26 thousand persons were outward. The volume of cargo handled was 9 thousand tons in total: 5 thousand tons of exports and 4 thousand tons of imports.

[Karamunting Palm Oil Terminal (KPOT)]

Outline

KPOT is located to the west of and next to Main Wharf, handling palm oil.

Facilities

KPOT has one oil jetty with Outer and Inner berths which is 330m long in total and 10.3m to 11.14m deep and can accommodate tankers with a maximum size of 30,000DWT. The jetty has pipelines on it.

Performance



The cargo throughput was 1.43 million tons in 2008 of which 1.12 million tons was outward and 0.31 million tons was inward.

The total number of ship calls is 381 of which 155 were by tankers and 226 were by barges.



Source: Sabah Ports Sdn Bhd

Figure 4.6-4 Karamunting Palm/Bulk Oil Terminal

[Karamunting Bulk Oil Terminal (KBOT)]

Outline

KBOT is located in the west of and next to KPOT, and acts as a distribution center of petroleum and chemicals for the eastern area of Sabah State.

Facilities

KBOT has one oil jetty with an outer berth which is 170m long, 9m deep and serves tankers with a maximum size of 30,000DWT. In the area next to KBOT, there are storage facilities owned by private companies. As the access bridge of the jetty was old and deteriorated, the access bridge of KPOT is currently shared by linking between KBOT and KPOT.

Performance

The cargo throughput was 310 thousand tons in 2008 all inward. The major commodities are gasoline, diesel, jet fuel, and methanol.

113 tankers called KBOT in 2008.

The total number of ship calls was 1,645 of which 387 were by tankers.

[Sungai Mowtas Oil Jetty (SMOJ)]

Outline

SMOJ is located in the western area of Sandakan Port, handling Palm Oil. In the area next to SMOJ, there are refinery plants of palm oil. Palm oil products are transported in tankers from the jetty. CPO, raw material of palm oil, is transported to the jetty by barge. SMOJ was constructed by IOI Edible Oil Sdn. Bhd., which is located just behind the jetty in BOT. The ownership of SMOJ was transferred to SPA in April, 2004 after the 20-year ownership period ended. Currently SPSB operates and maintains the jetty.



Source: Sabah Ports Sdn Bhd

Figure 4.6-5 Sungai Mowtas Oil Jetty

Facilities

SMOJ has one oil jetty with an outer berth which is 170m long and 9m deep and serve for tankers with a maximum size of 20,000DWT. The jetty has pipelines on it.

Performance

The cargo throughput was 1.79 million tons in 2008 of which 1.34 million tons was outward and 2.3 million tons was inward.

The total number of ship calls was 467 of which 133 were by tankers and 334 were by barge..

(4) Future Plans

Approach Channel

The approach channel to the west of Berhala Island is planned to be deepened to accommodate larger ships.

Main Wharf

A bulk fertilizer storage facility may be built in the area next to the container yard of Main Wharf

The quay of Main Wharf may be expanded eastward and equipped with a quayside container crane.

A new pier for barges may be constructed in front of the container yard of Main Wharf. All of the above plans are currently being examined.



4.7 Johore Port

(1) Outline of the Port

(a) Location and Roles

Johor Port is located at Pasir Gudang in the southeast of Johor in Peninsula Malaysia. (1° 26'06"North, 103° 54' 25"East)

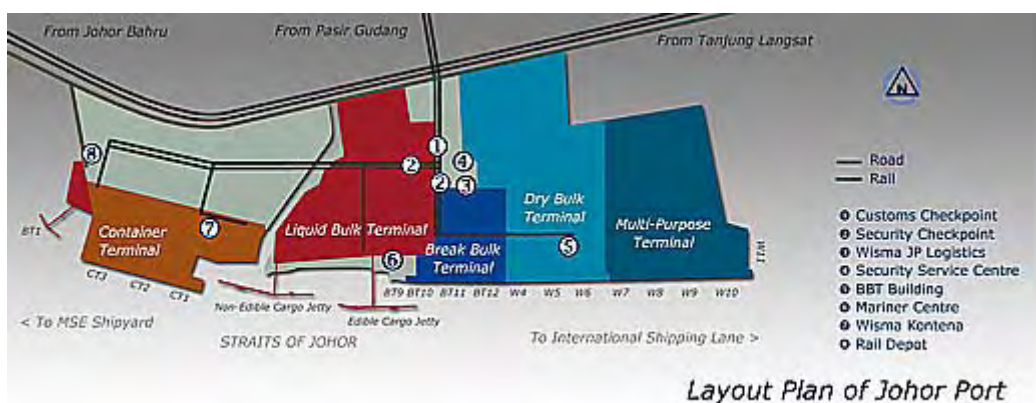
This port is known as a Multipurpose Port, which handles all range of cargoes including Liquid Bulk Cargo, Break Bulk Cargo, Dry Bulk Cargo and Containers.

This port is positioned in the heart of the sprawling 8,000-acre (3,200ha) Pasir Gudang Industrial Estate. The area is home to a comprehensive range of industries specializing in Petrochemicals, engineering, furniture, telecommunications, electronic goods and food products among others.



Source: Johor Port Berhad

Figure 4.7-1 Location of Johore Port



Source: Johor Port Berhad

Figure 4.7-2 Terminal Layout

(b) Operation and Management

Johor Port is under the management of JPA (Johor Port Authority), which was established in 1976 under the Port Authority Act of 1963. The first phase of the port came into full operation in the middle of 1977 under state ownership.

JPA regulates the operations of ports in Johor Port Water Limits. Covers regulation and enforcement in three locations, namely (1) the Johor Port at Pasir Gudang, (2) the Tanjung Pelepas



Port at Gelang Patah, (3)the Tanjung Belungkor Ferry Terminal at Kota Tinggi and (4)the Changi Ferry Terminal in Singapore.

In 1995 the port was fully privatised, and in February 1996 the port went public under the name Johor Port Berhad(JPB).

(2) Use of the Port

(a) Cargo Throughput

The annual a cargo handling volume was around 25 million tons in 2007. As for container cargo, the amount of international cargoes was about 927 thousands TEU in 2007.

About 40% of total cargoes are container cargo. The share of Liquid Bulk is 40% also.

Table 4.7-1 Annual Cargo Handling in Johor Port (2007)

	Container	Break Bulk	Dry Bulk	Liquid Bulk	Total	(Unit: tons) Container (TEU)
Total	9,404,564	2,387,037	4,125,367	9,395,814	25,312,782	927,285

2007Annual Report

Source: Johor Port Authority

(b) Ship Calls

Annual number of calls was 6,005 in 2008.

(c) Port Procedures

Web-based Johor Port Container Terminal System (JCTS), facilitating real-time, integrated, paperless transactions is introduced for the use of the container terminal. Multi-Purpose Terminal System (MPTS) is also introduced for the use of the Multi-purpose terminal.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The depth of the channel is 12.5mLSW.

ii) Pilot

Pilot Service is compulsory for vessels exceeding 45m LOA entering or leaving the port water limits. Ships are required to notify the Port 24 hours before their arrival at the pilot boarding station. Pilot Service is provided by JPB.

iii) Tugboat Service

Tugboats are available for both towage, berthing and deberthing within the port water limits. Tugboat Service is provided by JPB.

(b) Terminals

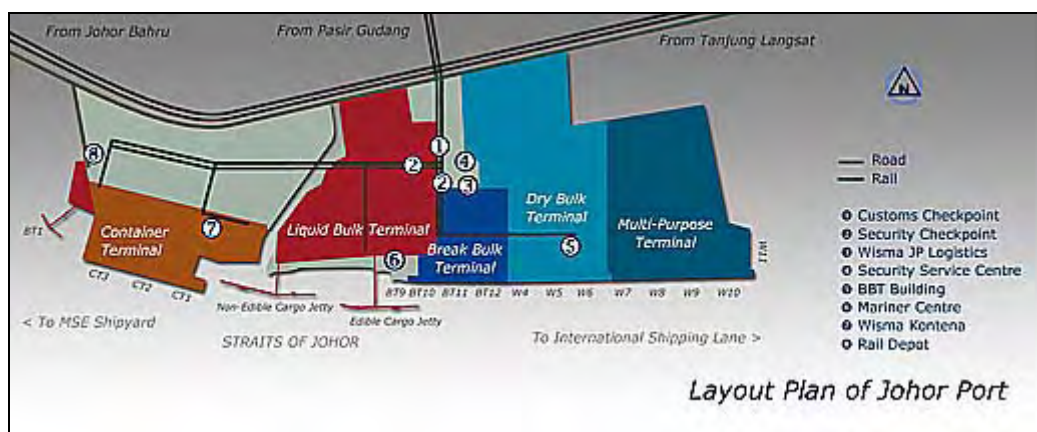
Johor Port has 13 Bulk cargo terminals, 9 Liquid terminals and 3 container terminals.



Table 4.7-2 Terminals in Johor Port

Terminal		Function	Manager	Quay Wall (m)	Depth Alongside (m)
Bulk	BT9~12	Liquid, Break bulk	JPB	537	6.5~12.5
	W4~6	Dry bulk	JPB	623	13.5
	W7~10, W11S, W11N	Multipurpose	JPB	1,130	11.0~13.8
Liquid Bulk	BT1~4,12	Non-edible	JPB	1,133	9.0~13.5
	BT5~8	Edible	JPB	657	9.0~11.5
Container	CT1~3	Container	JPB	759	14.0
Total				4,753	—

Source: Johor Port Berhad



Source: Johor Port Berhad

Figure 4.7-3 Layout of Terminals in Johor Port

[Bulk Terminal]

Most of the Bulk Terminals are positioned in the east part of Johor Port. Linear berthing length stretches 2.3km with a draught up to 13.8m.

The Bulk and Break Bulk terminal handles various types of cargo of, including edible and non-edible dry bulk, break bulk, general, project, heavy lift and gas-related cargoes.

Facilities

The port is equipped with a dedicated conveyer system supported by rail-mounted quay cranes. Storage facility for bulk and break bulk cargo is over 240,000 m².

[Liquid Bulk Terminal]

There are two, four-wharf jetties for Liquid Bulk Cargo Terminals, namely the Edible Liquid Terminal and the Non-Edible Liquid Terminal.

Most of the Liquid Bulk Terminal is positioned in the middle of Johor Port. Linear berthing length stretches 1.7km with a draught up to 13.5m.

Facilities

Liquid Bulk Terminal provides specialized facilities to cater for edible liquid and petrochemicals cargoes. The terminal uses a network of pipelines with multiple high capacity



loading arms to allow cargo to be conveyed directly to tank farms at high transfer rates.

Edible liquid terminal handles various edible liquid cargoes such as palm oil, soybean oil, corn oil, and coconut oil among others. In the backyard of the edible liquid terminal, there is one of the world's largest tank farms for edible oil, with a storage capacity of over 460,000 metric tons at any one time.

Meanwhile Non-Edible liquid terminal caters for fuel oil, petrochemicals, gas and other petroleum products. In the backyard of the Non-Edible liquid terminal, there are tank farms which provide up to 517,451 metric tons of storage capacity.

[Container Terminal]

Most of the Container Terminals are positioned in the west port of Johor Port.

Linear berthing length stretches 760m with a draught up to 14.0m.

Facilities

Container Terminal provides a capacity of 1.2 million TEUs.

Seven gantry cranes, 19 yard transfer cranes, 4 reach stackers(40ton capacity), 5 FELs for empty containers, and 50 prime mover/trailers are installed.

Web-based Johor Port Container Terminal System (JCTS), facilitating real-time, integrated, paperless transactions is introduced for the use of the container terminal.

Container yard area is 250,000 m². 110,000 m² Container Freight Station (CFS) facilities adjacent to the container Yard provide stuffing and unstuffing, LCL cargo consolidation, and temporary storage of break bulk cargo.

(4) Landside Transportation

Truck, trailers, and rail are the means of transportation to the terminals. Dedicated Rail depot within the terminal is connected to the nationwide rail network, Singapore and Thailand. No problem is observed in the access to the terminal.

(5) Future Plans

The extension of the wharf is no planned. It is possible to extend it to the eastern side.



4.8 Tanjung Pelepas Port

(1) Outline of the Port

(a) Location and Roles

Port of Tanjung Pelepas (PTP) is situated on the eastern side of the mouth of the Pulai River in South-West of Johor in Peninsula Malaysia. (1° 21' 58" North, 103° 32' 54" East)

PTP officially began its operation in 2000. One of PTP's advantages is that it is a mere 45 minutes from the confluence of the world's busiest shipping lanes and easily accessible from the Straits of Malacca.

World's biggest shipping company "Mearsk Sealand" and world's second biggest shipping company "Evergreen" moved to PTP from Singapore Port in 2000, and 2002.

After opening in 2000, cargo handling by PTP has been increasing. In 2008, PTP handled an approximate 5.6 million TEUs container. (18th in the World)

Development area consist of 2,000 acres (800ha) for port terminals and 1,000 acres (400ha) for Free Trade Zone. Over 30 international companies including Japanese companies have begun operations in the FTZ.



Source: Johor Port Berhad

Figure 4.8-1 Location of Tanjung Pelepas Port

(b) Operation and Management

Port of Tanjung Pelepas is under the management of JPA (Johor Port Authority), which was established in 1976 under the Port Authority Act of 1963. In 1999 Pelabuhan Tanjung Pelepas Sdn Bhd began operation of a container terminal, a transshipment hub for shipping lines and so on.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo handling volume was around 5.6 million TEUs in 2008. PTP ranked No.1 in Malaysia, and No.18 in the world.

The biggest commodities for both import and export are electronic equipment.

(b) Ship Calls

Annual number of calls was 3,747 in 2007. Currently, PTP have direct services to the main ports of the world 85 times a week and supported by feeder services to South East Asia 25 times a week.



(c) Port Procedures

Web-based Container Management System, facilitating real-time, integrated, paperless transactions as well as yard and vessel planning is introduced for the use of the container terminal.

Free Zone Information Processing System (FZIPS) allows paperless declarations for Free Zone users to government agencies such as Customers and for online approval processes.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The access channel to the port is 12.6km long. This channel is wide enough for two way traffic, and there is a wide turning basin for ships to maneuver.

JPA is responsible for dredging of the access channel, and PTP is responsible for maintenance.

ii) Pilot

Pilot Service is compulsory for all vessels entering or leaving the port water limits. Ships are required to notify the Port 3 hours before their arrival at the pilot boarding station. Pilot Service is provided by PTP.

iii) Tugboat Service

Tugboat Service is provided by The Hong Kong Salvage and Towage Co. Ltd.

(b) Terminals

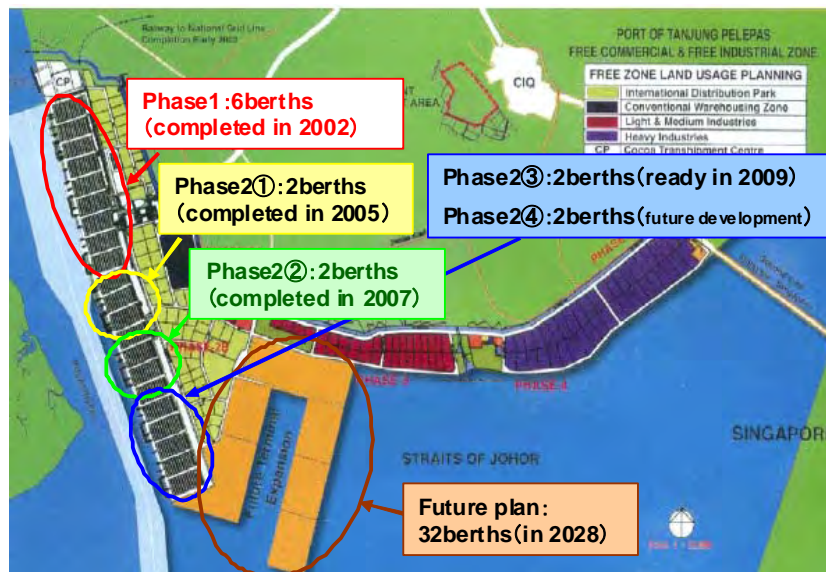
Outline

Port of Tanjung Pelepas has 10 linear container cargo terminals, and the length of each terminal is 360m. Six terminals have an alongside depth of 15m, while others have an alongside depth of 17m. Total capacity of the container terminals is about 8 million TEU. Container yard area is about 120ha.

Table 4.8-1 Terminals in the Port of Tanjung Pelepas

Terminal	Capacity (TEU s)	Number of the Quay Crane	Deapth Alongside (m)
Bearth 1-6	6 Million	24	15
Bearth 7&8	1.5 Million	8	17
Bearth 9&10	1.5 Million	8	17
Total			

Source: PTP



Source: PTP

Figure 4.8-2 Layout of Terminals in the Port of Tanjung Pelepas

Facilities

Container Terminal provides a capacity of 8 million TEUs.

Forty-four super-post panamax cranes are installed, of which 17 have 18 row outreach, and 19 have 22 row outreach & twin pick. Container yard capacity is about 200,000 TEUs.

(c) FTZ

Development area consist of 1,000 acres (400ha) for Free Trade Zone. Of this, approximately 400 acres (160ha) has been designated as a Free Commercial Zone (FCZ) reserved for distribution, logistics, and warehousing activities ideal for consolidation, International Procurement Centres, regional distribution centers, and distribution services. The remaining 600 acres of the Free Industrial Zone (FIZ) is reserved for light, medium and heavy manufacturing industries.

The developed areas of the Free Trade Zone have reached 360.86 acres (146ha). Out of this figure, 226.46 acres (92ha) was subleased to investors and the rest was either under negotiation or being marketed.

(4) Landside Transportation

PTP is connected to the national highway networks, which leads to the south of Singapore and up north to other ports of Johor, central and northern regions of Peninsula Malaysia and southern Thailand. Through the Second Link between PTP and Singapore, the road facilities that were provided by the government, PTP handled an approximate 1,000-1,500 TEUs container per month by using a Second Link to and from PTP.

PTP is connected to the national grid railway and has direct access to Singapore, southern Thailand and so on. In 2007, only 7,222 TEUs were handled by using railway services. There is no problem with landside transportation.

Concerning air, PTP is 40 minutes to Senai Airport in Johor, 45 minutes to Changi International Airport in Singapore, and 3 hours to Kuala Lumpur International Airport.



(5) Future Plans

PTP is currently constructing Berths 11 and 12, which will provide an additional 720 m of quay length. They are planned to be completed by the end of 2009. Once completed, PTP will have 12 berths with an annual terminal handling capacity of 10 million TEUs.

The development and expansion plan involves dredging and reclamation works for four additional berths, which will provide an additional 1.4 km of quay length. PTP plans to deepen the access channel further to 17.5 m, in order to allow vessels needing deeper draughts to access the port.

Table 4.8-2 Phase I • II Plan

PHASE	Berth	Capacity	Gantry Crane	Year
I	1-6	6 million TEUs	24	2002
II	7&8	1.5 million TEUs	8	2005
	9&10	1.5 million TEUs	8	2007
	11&12	1.5 million TEUs	8	2009
	13&14	1.5 million TEUs	8	—
Total		12 million TEUs	56	—

Table 4.8-3 Future Expansion Plan until 2028

Year	Bearth	Gantry Crane	Capacity
2008	10	40	8 Million TEUs
2013	17	67	15 Million TEUs
2018	24	94	22 Million TEUs
2023	33	132	31 Million TEUs
2028	46	185	45 Million TEUs



4.9 Kuantan Port

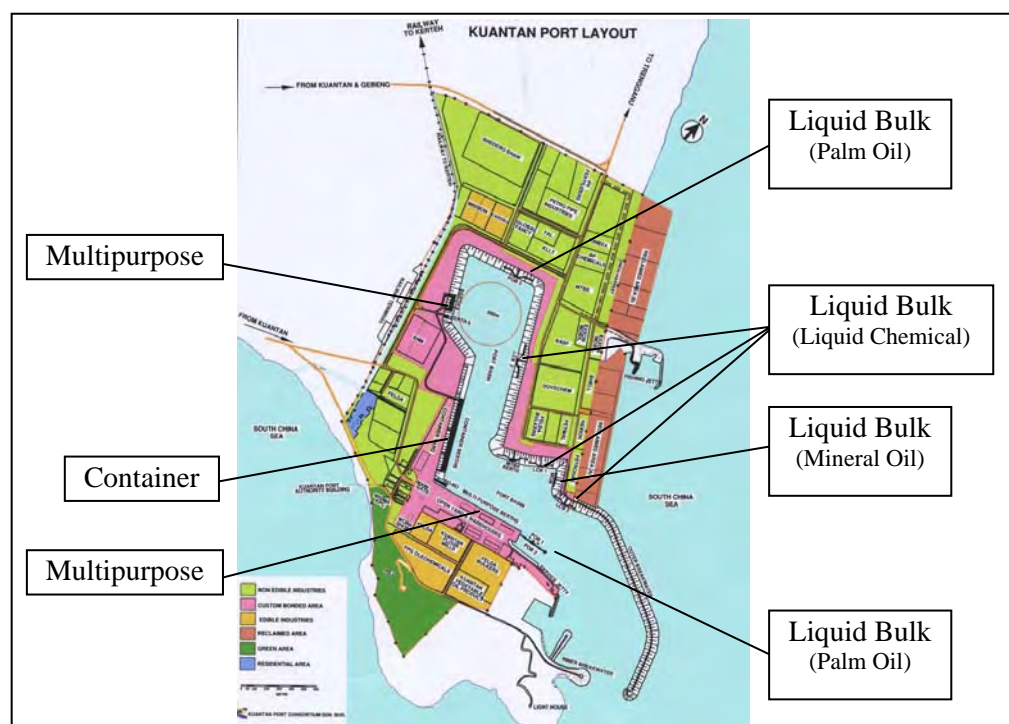
(1) Outline of the Port

(a) Location and Roles

Kuantan Port is located at Tanjung Gelang on the east coast of the Peninsular Malaysia. ($03^{\circ} 58'$ North, $103^{\circ} 26'$ East). The port acts as a gateway and supports the economic activities in the Eastern Corridor which is one of the economic development corridors of Malaysia and an indispensable logistics platform for the industrial park of Gebang Industrial Estate near the port and Kertieh Industrial Area in Terengganu State.



Figure 4.9-1 Location of Kuantan Port



Source: Kuantan Port Authority

Figure 4.9-2 Terminal Layout of Kuantan Port

(b) Operation and Management

Kuantan Port started operation partly in 1980 and fully in 1984 under the management of



Kuantan Port Authority (KPA). KPA was established in 1974 and operated the port. The operation of the port was transferred under a privatization scheme in 1998 to Kuantan Port Consortium Sdn. (KPC) which was the authorized terminal operator of the port. KPA currently administrates the port.

(2) Use of the Port

(a) Cargo Throughput

The cargo throughput of Kuantan Port in 2008 was 9.41 million tons in total, of which 5.57 million tons was outward and 3.83 million tons was inward.

The container throughput in 2008 was 127 thousand TEUs in total of which 65.0 thousand TEUs was outward, 62.1 thousand TEUs was outward.

Table 4.9-1 Cargo Throughput of Kuantan Port in 2008

	Container	Break Bulk	Dry Bulk	Liquid	Total	Container (TEUs)
Outward	1,180,045	830,798	1,309,783	2,253,813	5,574,439	64,962
Inward	405,051	881,433	868,732	1,675,810	3,831,026	62,099
Total	1,585,096	1,712,231	2,178,515	3,929,623	9,405,465	127,061

Source: Questionnaire

(b) Ship Calls

The number of ships calling Kuantan Port in 2008 was 2,315 in total.

Table 4.9-2 Ship Call of Kuantan Port in 2008

Total	Container	Conventional	Passenger	RORO	Others
2,315	412	913	896	0	94

Source: Questionnaire

(c) Port Procedures

The port entry clearances shall be requested to KPA, Marine Department of Ministry of Transport, customs, immigration and quarantine. Online clearance is available except for quarantine, but separate procedures are necessary because each online system is administrated separately.

The pre-arrival notification shall be made to KPA 48 hours before entering the port.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The approach channel of Kuantan Port is 4.8km long, 220m wide and 13m deep. The tidal range spring is 3.5m. The channel rarely needs maintenance dredging.

The anchorages are to be specified depending on the ship type. The anchorage for petroleum is 16m to 19m deep and the anchorage for explosives is 8m to 14m deep.

ii) Pilot

Pilotage is compulsory for all ships. Pilotage is provided by KPC. Pilots are licenced by KPA and currently there are 6 pilots.



iii) Tugboat Service

Tug services are provided by KPC. Normally two tug boats are stationed in Kuantan Port. If a larger one is requested, the tug boat in Kemaman Port is used.

(b) Terminals

Kuantan Port consists of multipurpose terminal, container terminal and liquid terminal. The function, size, and performances of those facilities are as shown in the following table.

Table 4.9-3 Major Terminals in Kuantan Port

Terminal Name	Administrator	Operator	Quay Length (m)	Ship Call	Cargo Throughput (tons)	Container Throughput (TEUs)
Container	KPA	KPC	600	412	1,585,096	127,061
Multipurpose	KPA	KPC	725	1,017	3,890,746	—
Liquid	KPA	KPC	1,700	896	3,929,623	—
Total			3,025	2,315	9,405,465	127,061

Source: Questionnaire

[Container Terminal]

Outline

Container terminal is located in the western part of Kuantan Port and is a detached pier structure.

Container Throughput

Container throughput in 2008 was 1.27 million TEUs (1.59 million tons), almost the same as the previous year.

Table 4.9-4 Container Throughput of Container Terminal in Kuantan Port

(unit: TEUs)

	2008			2007		
	Total	Laden	Empty	Total	Laden	Empty
Inward	62,099	19,231	42,868	61,904	16,738	45,166
International	44,956	19,111	25,845	42,720	16,630	26,090
Domestic	17,143	120	17,023	19,184	108	19,076
Outward	64,962	59,048	5,914	65,696	63,981	1,715
International	63,764	58,132	5,632	65,030	63,432	1,598
Domestic	1,198	916	282	666	549	117
Total	127,061	78,279	48,782	127,600	80,719	46,881
International	108,720	77,243	31,477	107,750	80,062	27,688
Domestic	18,341	1,036	17,305	19,850	657	19,193

Source: Questionnaire

Terminal Facilities

The quay of the terminal has 3 berths (CB1, CB2, CB3) and is 600m long, 11.2m deep and equipped with 4 quayside gantry cranes. CB1 and CB2 were constructed in 2003 and CB3 in 2007.

The terminal has an area of 3.2ha with a cargo handling capacity of 0.6 million TEUs and is equipped with 1,750 ground slots and 168 reefer plugs.

The yards are operated with 4 RTGs and 3 reach stackers.

Operation

The land of container yard, quayside cranes and yard equipment are owned by KPA



KPA, as the terminal operator, provides services such as berthing, stevedoring, stacking export containers, delivering import containers. The gross productivity of quayside crane is 29moves/hour/crane and the net productivity is 38moves/hour/crane.

Cargo handling services are provided 24 hours a day using 3 shifts. Two gates are open around the clock.

Landside Transportation

Two-lane access road links to the terminal. The ramp of the East Coast Expressway connecting to the capital city of Kuala Lumpur is approx. 15km away from the terminal.

Railway yard is 2km from the terminal and used for transporting tank containers of chemical products mainly from Kerti Industrial Area in Terengganu State.

[Multipurpose Terminal]

Outline

Multipurpose Terminal is located in the southern part of Kuantan Port.

Facilities

The quay of the terminal has 8 berths and is 725m long and 11.2m deep and accommodates ships with a maximum size of 45,000DWT.

The terminal has an open yard with an area of 4.1ha and warehouses with a total floor area of 3.3ha.

Performance

The cargo throughput was 3.8 million tons in 2008. The major commodities are steel pipe, coal, iron ore, wood chip. The steel pipes are imported from Japan and processed at the site near the port for preventing corrosion with concrete coating. The processed steel pipes are exported to the Middle East.

1,017 ships called the terminal.

[Liquid Terminal]

Outline

Liquid Terminal is located in the eastern part of Kuantan Port.

Facilities

The quay of the terminal has 8 berths and is 1,700m long and 11.2m deep and serves ships with a maximum size of 53,000DWT.

Performance

The cargo throughput was 3.9 million tons in 2008. The major commodities are chemical products, palm oil, and edible oil.

896 ships called the terminal.

(4) Future Plans

KPA has a plan to construct a new outer breakwater from the existing port and secure the space for future development including development of container terminals. This plan needs approval from the federal government.



4.10 Kemaman Port

(1) Outline of the Port

(a) Location and Roles

Kemaman Port is strategically located on the east coast of Malaysia in the state of Terengganu. (4° 15'00"North, 103° 28' 00"East) The port is located right in the heart of the East Coast Economic Region about 75km from Kuantan, 90km from Kuantan Airport and 40km from Kertih Airport. It is one of the deepest seaports in Malaysia with a 16.4m multi-purpose terminal. It is capable of handling vessels up to 150,000 DWT.

Main commodities are petrochemicals, LPG, and break bulk cargo.



Figure 4.10-1 Location of the Kemaman Port

(b) Operation and Management

Kemaman Port is under the management of KPA (Kemaman Port Authority), which was established in 1993 under the Port Authority Act of 1963.

In 2007 the port was privatized to a licensed port operator, Konsortium Pelabuhan Kemaman Sdn Bhd. Kemaman Port Authority now acts as a regulator and facilitator for the development of Kemaman Port.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo handling volume was around 3.9 million tons in 2008, 1.7 million tons for export, and 2.2 million tons for import. Container cargo is not available.

Table 4.10-1 Annual Cargo Handling in Kemaman Port (2008)

	Breakbulk	Dry Bulk	Liquid	Container	Total
Export	314,562	95,325	1,303,262	0	1,713,149
Import	57,445	1,897,169	245,647	0	2,200,261
Total	372,007	1,992,494	1,548,909	0	3,913,410

Source: Questionnaire



Table 4.10-2 Annual Cargo Handling in Kemaman Port by terminals (2008)

Termi-nals	Shipcalls	Total Cargo (tons)
East Wharf	207	2,458,822
Liquid Chemical Berth	—	—
LPG Export Terminal	97	1,226,658
Kemaman Supply Base	—	—
West Wharf	40	227,930

Source: Questionnaire

(b) Ship Calls

Annual number of ship calls was 344 in 2008. The number of tanker vessel calls was 97 while that for conventional or bulk vessel calls was 247.

Table 4.10-3 Annual number of ship calls in Kemaman Port (2008)

Total	Container Vessels	Conventional	Bulk	Tanker
344	-	-	247	97

Source: Kemaman Port Authority

(c) Port Procedures

Two days are required for Port Entry Authorization

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The access channel to the port is 11km long. This channel is 300m wide inside and 800m wide outside with 18.0mLSW depth.

ii) Pilot

Pilot Service is compulsory for supply vessels and vessels under 70m LOA boats. Vessels are required to notify the port 24 hours before their arrival at the pilot boarding station. Pilot Service is provided by Konsortium Pelabuhan Kemaman Sdn Bhd.

(b) Terminals

Kemaman Port is operated by 4 operators including KPB.



Table 4.10-4 Terminals in Kemaman Port

Terminal	Operator	Type of Terminal	No. of Berths	Berth Length (m)	Depth (m)	Area (ha)	Max DWT	Berth Capacity (million ton/year)
East Wharf	Konsortium Pelabuhan Kemaman Sdn. Bhd.	Multipurpose	3	648	16.4	10.2	150,000	6.85
Liquid Chemical Berth		Liquid	1	324	16.4	2.4	150,000	2.60
LPG Export Terminal	Petronas Gas Sdn. Bhd.	Liquid	1	320	13.0	—	60,000	1.04
Kemaman Supply Base	Pangkalan Bekalan Kemaman Sdn. Bhd.	Multipurpose	5	360	8.0	—	8,000	0.80
West Wharf	West Wharf - Kuantan Port Consortium Sdn. Bhd.	Multipurpose	2	510	16.4	—	150,000	6.60

Source: Questionnaire, Konsortium Pelabuhan Kemaman



Source: Kemaman Port Authority

Figure 4.10-2 Layout of Terminals in Kemaman Port

(4) Landside Transportation

The port is linked by air and road to major towns in Malaysia. The completion of the East Coast Highway, scheduled for May 2011, will also boost access to the port.

(5) Future Plans

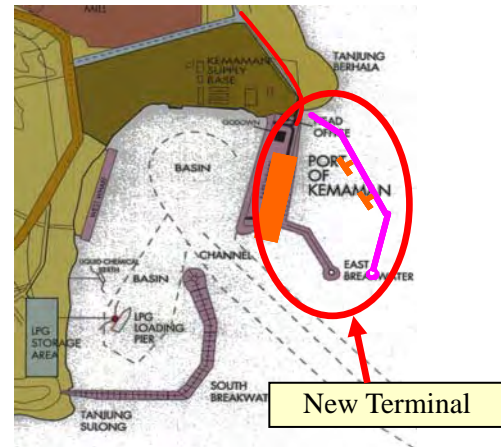
The extension of the wharf is not planned. It is possible to extend it to the eastern side.

New Terminal

New breakwater & berths adjacent to the East Wharf to boost capacity for future use.



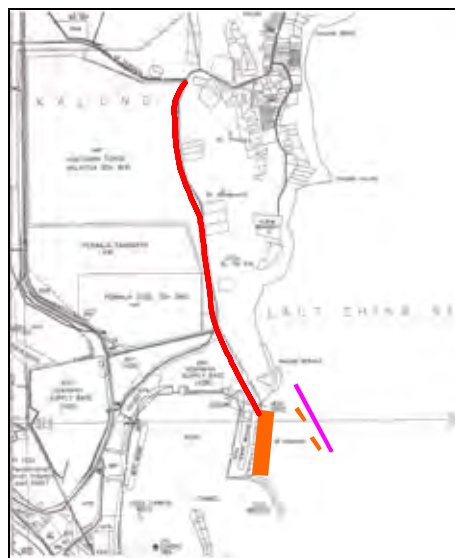
New access road



Source : Kemaman Port Authority

Source : Konsortium Pelabuhan Kemaman

Widening of the 1.5km access road from East Wharf to Telok Kalong, passing near Huntsman Tioxide.



Source : Kemaman Port Authority



5. Myanmar

5.1 Yangon Port

(1) Outline of the Port

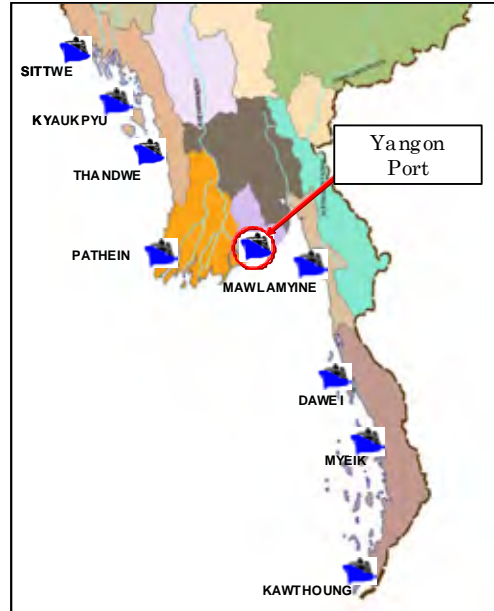
(a) Location and Roles

The Port of Yangon is situated on the Yangon River about 32 km inland from the Elephant Point on the Gulf of Martaban. (16° 45'57"North, 96 ° 10' 12"East)

The Port of Yangon is the premier port of Myanmar and handled about 90 % of the country's exports and imports.

Asia World Port Terminal (AWPT) & Myanmar Industrial Port (MIP) terminal were developed as a BOT infrastructure and operated by AWPT & MIP. Duration of concession is 25-30 years.

Boaungkyaw Street Wharf (BSW), and Sule Pagoda Wharf (SPW) are operated by the Myanmar Port Authority (MPA)



Source: Myanmar Port Authority

Figure 5.1-1 Location of Yangon Port

(b) Operation and Management

Yangon Port is under the management of MPA (Myanmar Port Authority). All the duties, functions, powers and obligations are governed by Rangoon (Yangon) Port Act, 1905 and by the Order conferring Duties and Power of the corporation issued by the Ministry of Transport and Communications.

MPA has powers to allocate all the cargoes to terminals. Tariff is the same level between terminals.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo handling volume including Thilawa Port was around 12 million tons in 2006. As for container cargo, the volume of international cargoes was 189,690 TEU in 2006.

Major commodities in BSW (Boaungkyaw Street Wharf), and SPW (Sule Pagoda Wharf) are rice and timber for export, cement for import.

Table 5.1-1 Annual Cargo Handling in Yangon Port (2006)

	Container	Non-Container	Total	(Unit: tons)
				Container (TEU)
Export	1,726,990	4,379,659	6,106,649	95,782
Import	1,246,601	4,649,853	5,896,454	93,908
Total	2,973,591	9,029,512	12,003,103	189,690

Source: Myanmar Port Authority



(b) Ship calls

Annual number of ship calls including Thilawa Port was 1,310 in 2006. The number of container cargo vessel calls was 313.

Table 5.1-2 Annual Number of Ship Calls in Yangon Port (2006)

	Total	Container	Others
Total	1,310	313	997

Source: Myanmar Port Authority

(c) Port Procedures

Three days are required for Port Entry Authorization

EDI System is not introduced yet.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

The access channel to the port is 62km long. This channel is 600m wide, and 9.0mLSW depth. The average tidal range is about 19.3 feet (5.85 m) at spring tide and 8.4 feet (2.55 m) at neap tide.

The Yangon Port is accessible to vessels of 167 m LOA, 9m Draft, 15000 DWT.

ii) Pilot

Pilot Service is compulsory for vessels exceeding 200 GRT. Navigation is generally on a flood tides and has to be timed to cross both Inner Bar and Outer Bar near high tide to ensure sufficient depth.

(b) Terminals

Terminals are owned by MPA, AWPT, MIP.

Table 5.1-3 Terminals in Yangon Port

Terminal		Owner	Quay Wall (m)	Depth Alongside (m)
General Cargo	SPW No.1 to 7 (Sule Pagoda Wharf)	MPA	1,040	9.0
General Cargo/ Container	Bo Aung Gyaw Wharves No.1 and 2	MPA	274	9.0
	Ahlong Wharves No.1, 2 and 3	AWPT	614	9.0
	Myanmar Industrial Port	MIP	310	10.0
Container	Bo Aung Gyaw Wharf No.3	MPA	183	—
Total			2,420	

※SPW : Sule Pagoda Wharf, AWPT : Asia World Port Terminals, MIP : Myanmar Industrial Port

Source: Myanmar Port Authority



Source: Myanmar Port Authority

Figure 5.1-2 Layout of Terminals in Yangon Port

(4) Landside Transportation

Truck, trailers, and rail are transportation for terminals. Expressway Connection is not available .

(5) Future Plan

As a short and medium term port development, berths and depots were developed under a state owned investment program as well as through a local and foreign investment program at Yangon harbour area since 1995.

No.4 G.C cum Container Wharf is currently under construction and scheduled to be completed in 2011 by AWPT.

As near future plans, old Hteedan Wharf shall be reconstructed for modern solid bulk handling wharves (or) general cum container wharves and Sule Pagoda Wharf shall be extended to serve as a multi purpose wharf.



5.2 Thilawa Port

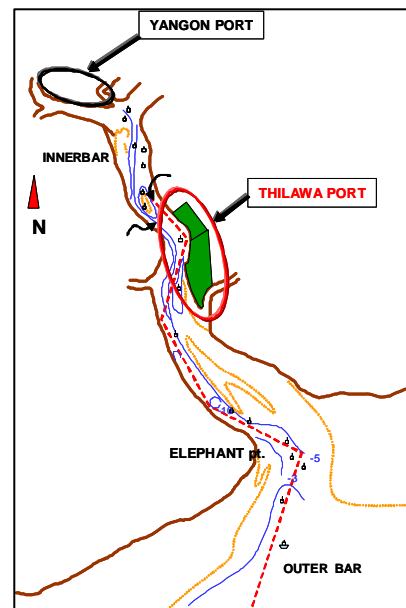
(1) Outline of the Port

(a) Location and Roles

Thilawa Port is located at the site some 16km downstream from Yangon Port in Yangon River. (16 ° 40'27"North, 96 ° 14' 29"East) This port was constructed because of difficulties of Yangon port expansion.

MITT (Myanmar International Terminals Thilawa) Wharves & MIPL (Myanmar Integrated Port Limited) Wharf were developed as a BOT infrastructure and operated by MITT & MIPL. Duration of concession is 25 years.

MITT terminal is fully owned by Hutchison Port Holdings. MIPL is owned by Austin Navigation Co., Ltd.



Source: Myanmar Port Authority

Figure 5.2-1 Location of Thilawa port

(b) Operation and Management

Thilawa Port is under the administration of MPA (Myanmar Port Authority). All the duties, functions, powers and obligations are governed by Rangoon (Yangon) Port Act, 1905 and by the Order conferring Duties and Power of the corporation issued by the Ministry of Transport and Communications. MPA has powers to allocate all the cargoes to terminals. Tariff is the same level between terminals. Terminal operators are MITT & MIPL.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo handling volume including Yangon Port was around 12 million tons in 2006. As for container cargo, the volume of international cargoes is 189,690 TEU in 2006.

Major commodities of Non-Container cargo are timber, fertilizer and steel..

Table 5.2-1 Annual Cargo Handling in Thilawa Port (2006)

(Unit: tons)

	Container	Non- Container	Total	Container (TEU)
Export	1,726,990	4,379,659	6,106,649	95,782
Import	1,246,601	4,649,853	5,896,454	93,908
Total	2,973,591	9,029,512	12,003,103	189,690

Source: Myanmar Port Authority

(b) Ship calls

Annual number of ship calls including Yangon Port was 1,310 in 2006. The number of container cargo vessel calls was 313.



Table 5.2-2 Annual Number of Ship Calls in Yangon Port (2006)

	Total	Container	Others
Total	1,310	313	997

Source: Myanmar Port Authority

(c) Port Procedures

Three days are required for Port Entry Authorization

EDI System is not introduced yet.

(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Thilawa Port is accessible up to vessels of 200 m LOA, 9m Draft, 20,000 DWT. Deeper draft vessels can access Thilawa Port rather than Yangon Port.

ii) Pilot

Pilot Service is compulsory for vessels exceeding 200 GRT. Navigation is generally on a flood tide and has to be timed to cross Outer Bar near high tide to ensure sufficient depth.

(b) Terminals

Terminals are owned by MITT, MIPL. Both terminals were developed as a BOT infrastructure.

In MITT terminal, 2 container quay cranes were wrecked because of the Myanmar cyclone in 2008. Only ship cranes are available to load or unload cargoes.

Table 5.2-3 Terminals in Thilawa Port

Terminal		Owner	Quay Wall (m)	Depth Alongside (m)
General Cargo/ Container	Thilawa Plot No.5, 6, 7, 8 and 9	MITT	1,000	9.0~10.0
Liquid Bulk Cargo/ Container	Thilawa Plot No.4	MIPL	200	11.0
Total			1,200	

※MITT : Myanmar International Terminals Thilawa, MIPL : Myanmar Integrated Port Limited

Source: Myanmar Port Authority



Source: Myanmar Port Authority

Figure 5.2-2 Layout of Terminals in Thilawa Port

(4) Landside Transportation

Main transportation for terminals is truck and trailers. Expressway Connection is not available. Railway does not offer regular services.

(5) Future Plan

As a total plan in Thilawa Port, 37 berths (each measuring 200m in length and 750m landward) will be developed. Ten berths are available now, and 5 berths are under construction. Twentytwo plots of land are reserved at Thilawa Port area. Seven quay cranes are also planned. In future 100,000TEUs of container cargoes will be handled.

Thilawa port will consist of container wharves, liquid wharves, solid bulk wharves, timber handling berths, general cargo berths.



5.3 Kyaukphyu Port

(1) Outline of the Port

(a) Location and Roles

Kyaukphyu Port is located in Rakhine state near Bangladesh. (19 ° 22'06"North, 93 ° 40' 08"East) Only 2 jetties have been developed at the present time. Kyaukphyu Port used to be a transit port to Bangladesh but now functions as a domestic port.

Kyaukphyu Port was selected for future deep sea port development of the country. (Myanmar Port Authority also selected Kalegauk, Dawei, Bokpyin as deep sea ports.)

Chinese government has an interest in the route between China's land-locked Yunnan province and Bay of Bengal. China will begin to lay parallel oil and natural gas pipelines. The port of Kyaukpyu will be the terminus for the Middle East and African tankers supplying oil to China.



Figure 5.3-1 Location of Kyaukphyu Port

(b) Operation and Management

Kyaukphyu Port is under the management of MPA (Myanmar Port Authority). All the duties, functions, powers and obligations are governed by the Rangoon (Yangon) Port Act, 1905 and by the Order conferring Duties and Power of the corporation issued by the Ministry of Transport and Communications.

(2) Use of the Port

(a) Cargo Throughput

The annual cargo handling volume is 21,627 tons in 2008-2009. Major commodities of cargo are fisheries for import, and salt for export. Passenger boat is available.

Table 5.3-1 Annual Cargo Handling in Kyaukphyu Port (2008-2009)

(Unit: tons)	
Cargo Throughput	
Export from Myanmar	16,433
Import from Myanmar	5,194
Total	21,627

Source: Myanmar Port Authority



(3) Port Facilities

(a) Waterway

i) Approach Channel and Anchorage

Approach channel has the least available depth (LAD) of 24m LSW and the harbpor area has LAD of 20m. The tidal range is 2~2.7m.

(b) Terminals

Two jetties have been developed.

Table 5.3-2 Terminals in Kyaukphyu Port

Terminal	Remarks
No.1 Jetty	<ul style="list-style-type: none"> • Constructed in 1970. • Uregent repairing is needed. • Major commodities of cargo are fisheries for import, and salt for export
No.2 (1) Pontoon	<ul style="list-style-type: none"> • Pontoon
No.2 (2) Pontoon	<ul style="list-style-type: none"> • Pontoon • funded by Asia Development Bank (ADB)
No.2 (3) Jetty	<ul style="list-style-type: none"> • Jetty • Passenger boat is available.
No.2 (4) Jetty	<ul style="list-style-type: none"> • Private Jetty • Passenger boat is available.

Source: On site Visit



(NO.1 Jetty)



(No.2 (1)-(4) Jetty/Pontoon)

Figure 5.3-2 Layout of Terminals in Kyaukphyu Port

(4) Landside Transportation

Transportation for terminals is by truck and trailers. Roads are not paved with asphalt.

(5) Future Plan

Kyaukphyu Port was selected for future deep sea port development of the country. Feasibility



study by an Indian Survey Team in 2001, concluded that the proposed site of Made Island is the best alternative and recommended it for the development of a deep sea port.

Chinese government has interest in the route between China's land-locked Yunnan province and Bay of Bengal. China will begin to lay parallel oil and natural gas pipelines. The port of Kyaukpyu will be the terminus for the Middle East and African tankers supplying oil to China.

The expected capacity of the vessels to be accommodated will be 40,000 DWT G.C and 5,000 TEUs .

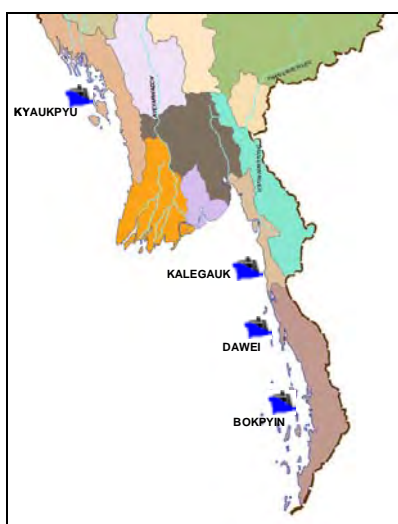


Figure 5.3-3 Location of Deep Sea Port

Table 5.3-3 Planned Terminals in Kyaukphyu Port

Phase	Terminal	Berth Length	Investment (USD)
Phase I	Multi-purpose Terminal	300 m (1Berth)	36.3 Millions
Phase II	Multi-purpose Terminal	600 m (2Berths)	93.74 million

Source: Myanmar Port Authority