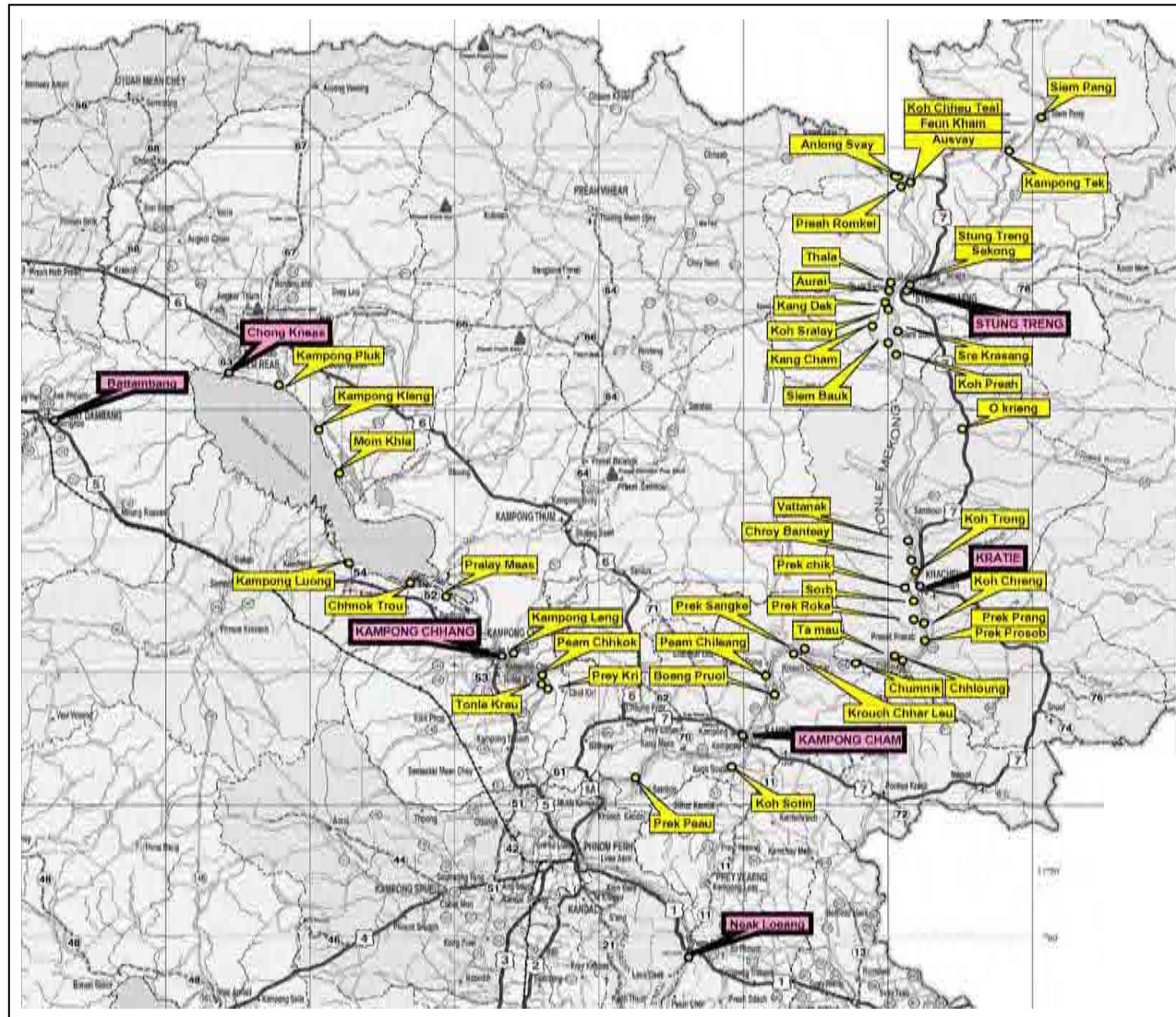


## 2. River Ports Overview

No.	Provinces						
	KAMPONG CHHNANG	KAMPONG CHAM	KRATIE	STOEUNG TRENG	SIEM REAP	BATTAMBANG	KANDAL/ PREY VENG
1	Kampong Leng	Boeung Proul	Chroy Banteay	Anlong Svay	Chong Kneas *	Battambang *	Neak Loeng *
2	Peam Chhkok	Chinik	Koh Chreng	Aurai	Kampong Khleang		
3	Prey Krei	Koh Sotin	Koh Trong	Ausvay	Kampong Pluk		
4	Prolay Meas	Krouch Chhmar	Prek Chik	Feun Kham	Mom Khla		
5	Samrong Sen	Peam Chileang	Prek Krieng	Kampong Tek			
6	Tonle Krao	Prek Peau	Prek Prang	Kang Cham			
7	Kampong Chhnang *	Prek Sangke	Prek Prosob	Kang Dek			
8		Kampong Cham *	Prek Roka	Kan-tuykor			
9			Sorb	Koh Chheu Teal			
10			Vattanak	Koh Preah			
11			Kratie *	Koh Sralay			
12				Preah Romkel			
13				Siem Bauk			
14				Sieng Pang			
15				Sre Krasang			
16				Thala			
17				Stoeung Treng *			
Sub-total	7	8	11	17	4	1	1
Total = 49							

\* Provincial Port

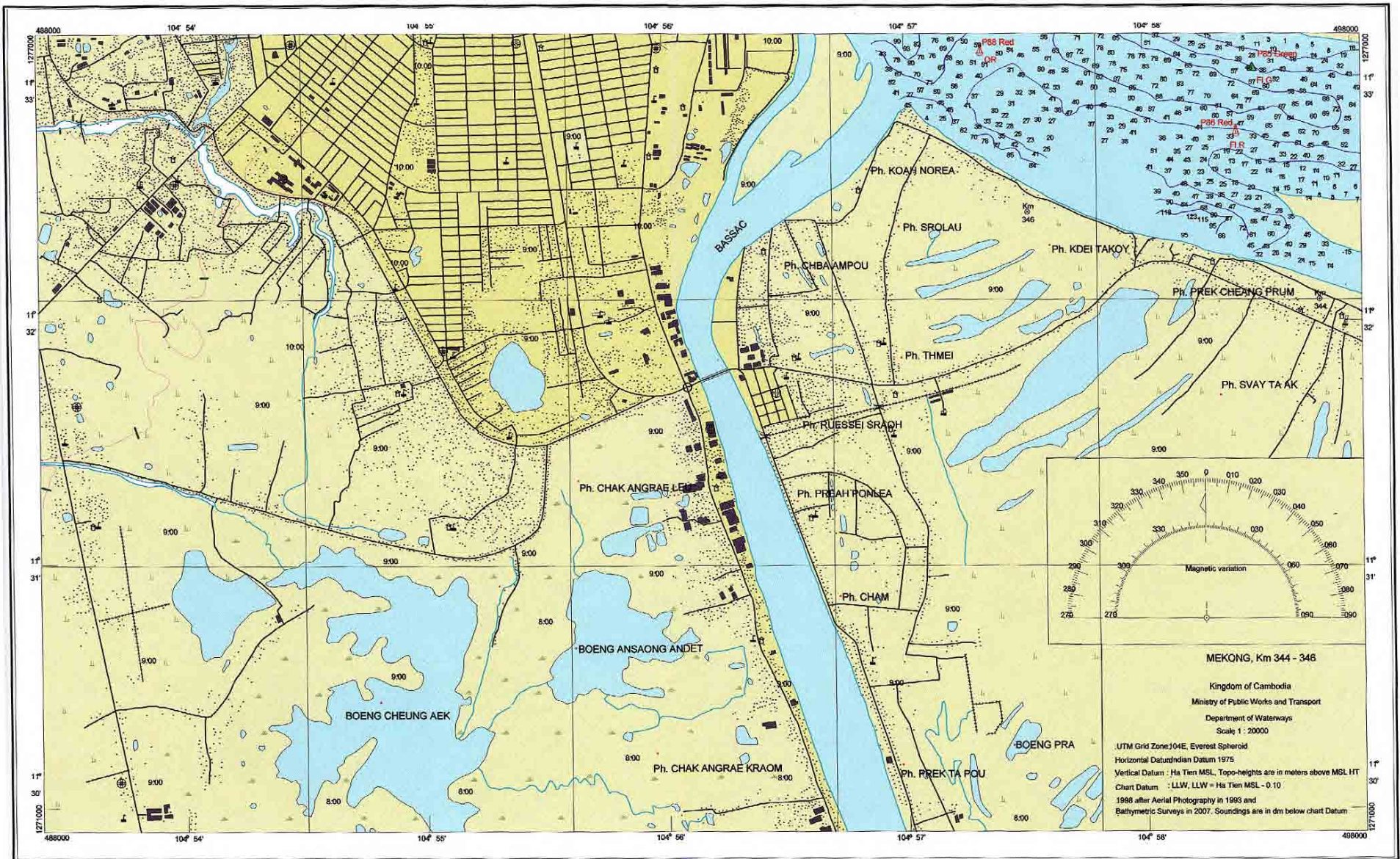
Others are District or Community Ports



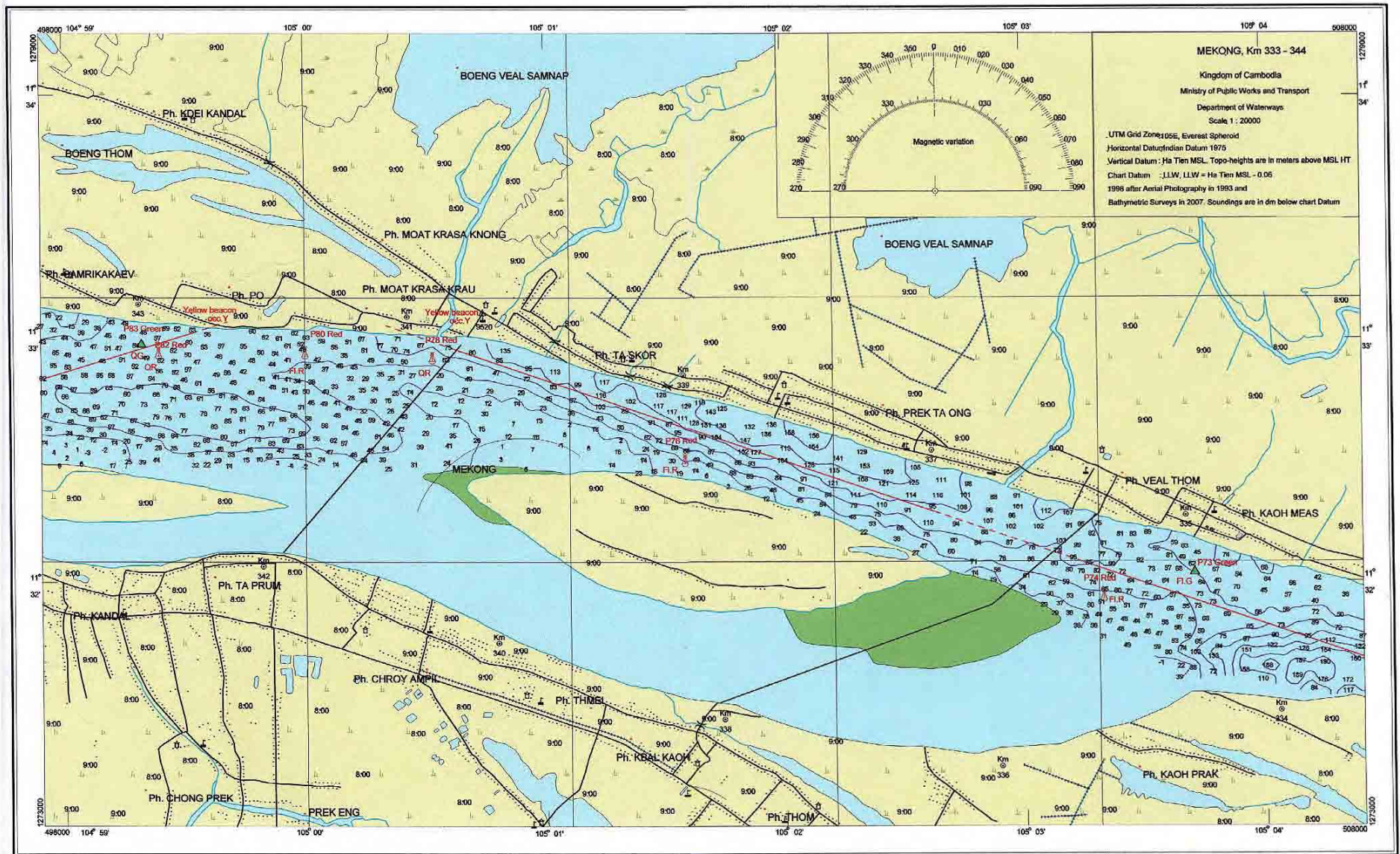
3. Mekong River Bathymetry (1) Phnom Penh



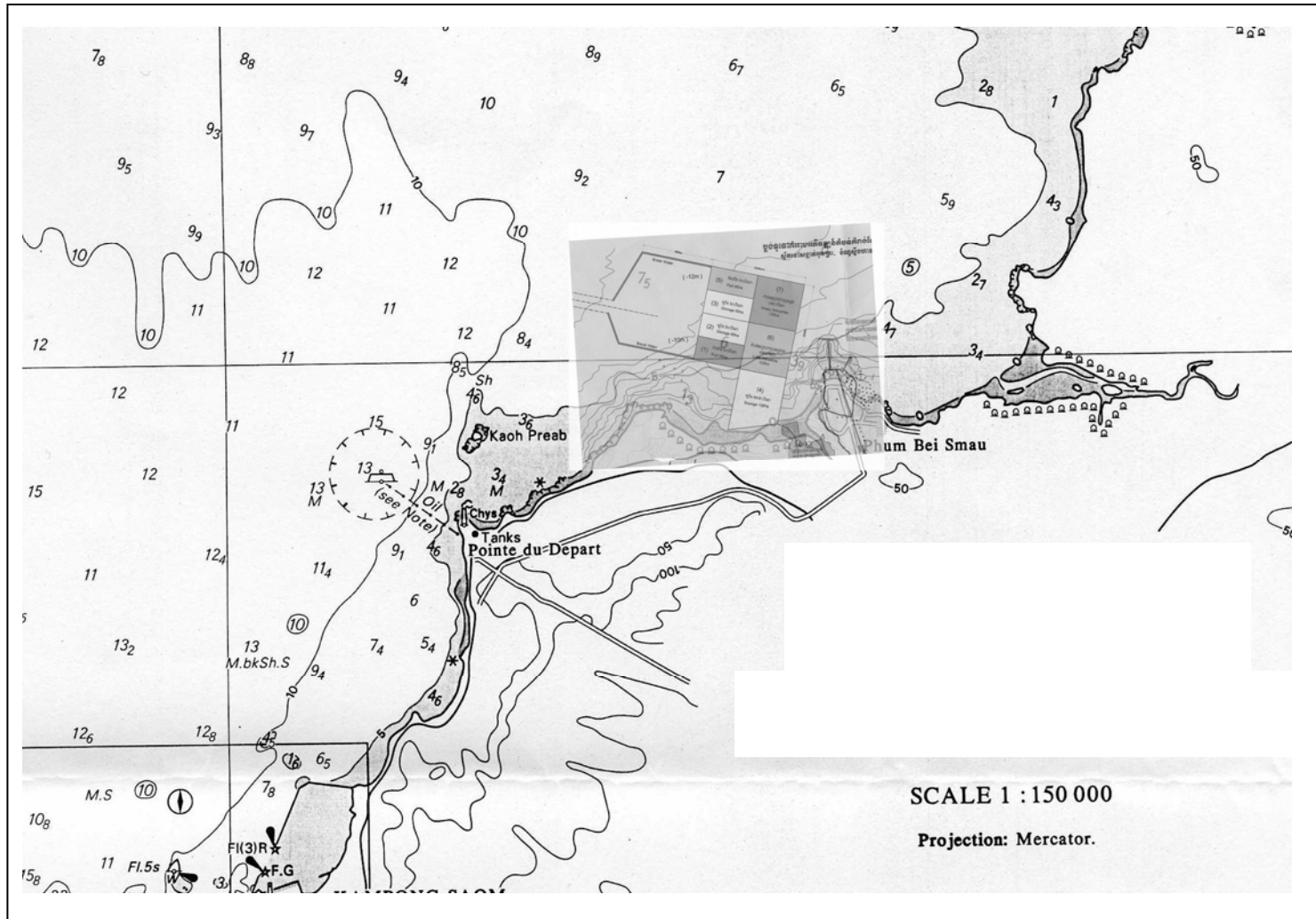
Mekong River Bathymetry (2) Phnom Penh



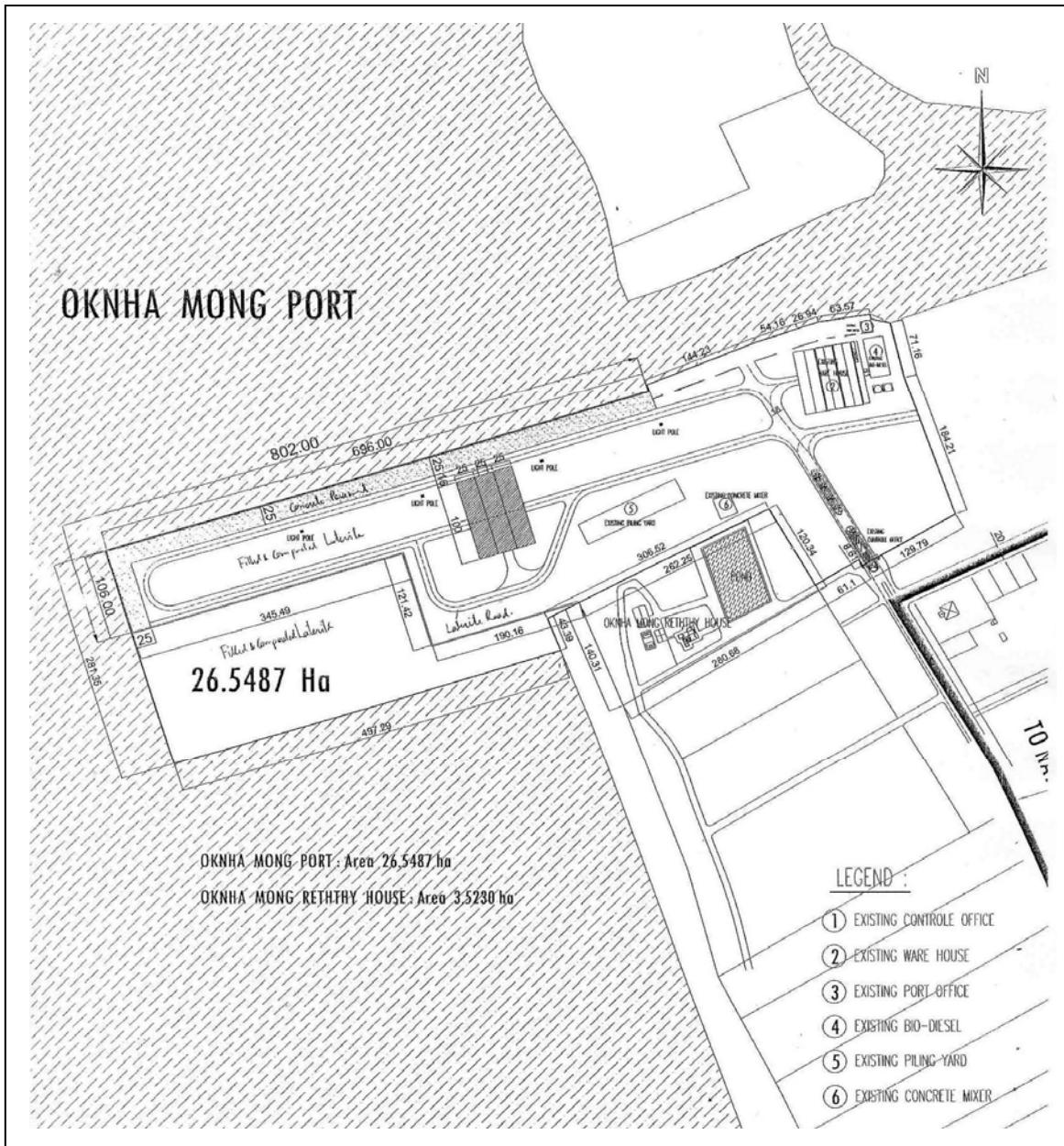
Mekong River Bathymetry (3) Phnom Penh



### 4. Stueng Hav Port Development Plan



5. Oknha Mong Port Plan



## Chapter 8 Reference

### 1. Statistics of Containers of MANHATTAN SEZ

Passing through the Bavet Border Checkpoint between Cambodian and Vietnamese Sides

Average of quotations for the last three months: November, December 2006 and January 2007

No.	Private Company's Name	Product (locally assembled)	Average Number per month	
			Export by Container Box	Import by Container Box
1	BEST WAY CO.;LTD MANHATTAN SEZ	Racing Bicycles	60	100
2	SYG STEEL CO.;LTD MANHATTAN SEZ	Screws		
3	KING MAKER MANHATTAN SEZ	Footwear (Shoes)		
4	SOU NGOUN CO.;LTD Container Form 2, only checking the documentation and allowing passing, without inspecting at the checkpoint, directly to its dry port in Phnom Penh.	-	-	150
5	ATLANTIC + SVAY RIENG GARMENT (Non-MANHATTAN SEZ MEMBER)	-	40	-
6	ATLANTIC + LAMORE + PHNOM PENH (Non-MANHATTAN SEZ MEMBER)	-	-	70

Source: CAMCONTROL, Bavet



## Chapter 10 Reference

### 1. Inputs for Logit Model

(1) Demarcation between Sihanoukville port (Route 1) and Ho Chi Minh Ports (Route 2 & 3)

(a) Port Cost

Present port costs of Sihanoukville port and Phnom Penh port are cited from Table 14.1.3 in Section 14.1.2. Port cost of Ho Chi Minh ports is cited from Table 14.2.3 and Table 14.2.4 in Section 14.2.1.

Port cost of Sihanoukville port at 2020 is set to be 50% of the base year's value, corresponding to cost cutting efforts in the highly and moderately improved cases.

(b) Ocean Freight Rate and Inland Waterway Transportation Cost

According to the survey of the Study Team, at the beginning of 2007, typical ocean freight rate is 2,600 USD/FEU for Sihanoukville—USWC and 2,000 USD/FEU for Ho Chi Minh—USWC. According to interviews with organizations concerned, inland waterway transportation cost is approximately 500 USD/FEU for Phnom Penh—Ho Chi Minh.

Ocean freight rate for Sihanoukville—USWC at 2020 is set to be 90% of the base year's value, corresponding to the possible upgrading of calling ships in the highly improved case.

(c) Transportation Time

Transportation time at present is estimated as below;

(i) Route 1: 26 days

Phnom Penh City—Sihanoukville Port: 1 day, Wait in Sihanoukville Port: 3 days, Sihanoukville Port—Singapore Port: 2 days, Wait in Singapore Port: 3 days, Singapore Port—USWC: 17 days

(ii) Route 2: 25 days

Phnom Penh City—Phnom Penh Port—the Mekong River—Ho Chi Minh Port: 2 days, Wait in Ho Chi Minh Port: 3 days, Ho Chi Minh Port—Hong Kong Port: 3 days, Wait in Hong Kong Port: 3 days, Hong Kong Port—USWC: 14 days

Transportation time for Route 2 at 2020 is estimated as 22 days, assuming that mother ships of Asia—North America liner shipping service directly call at Cai Mep—Thi Vai container terminal.

Phnom Penh City—Phnom Penh Port—the Mekong River—Ho Chi Minh Port: 2 days, Wait in Ho Chi Minh Port: 3 days, Ho Chi Minh Port—USWC: 17 days

(d) Barrier cost

To meet the present demarcation, barrier cost is estimated as 100 USD/TEU for Route 1 and 1,825 USD/TEU for Route 2. Barrier cost is barriers against cross border transport, which is expressed as a monetary value, such as unofficial cost at the border and imbalance of cargo.

Table 1.1 Demarcation at Base Year (2005)

VTcarr	1.44			
theta	0.0141			
USD to JPY	119.6			
<b>Route 1: Phnom Penh-Sihanoukville-USWC</b>				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh City -Sihanoukville Port (*1)	618.84	74.0		
c2: Sihanoukville Port-USWC (*2)	1,300.00	155.5		
c3: Generalized Barrier Cost	100.00	12.0		
	hours	JPY		
		(thousand)		
T1: Transportation Time (*3)	624	898.6		
C1: Route 1 Total		1,140.1	1.04361E-07	87.5%
<b>Route 2 &amp; 3: Phnom Penh-Ho Chi Minh-USWC</b>				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh City-Phnom Penh Port (*1)	263.40	31.5		
c2: Phnom Penh Port-Ho Chi Minh Port (*4)	250.00	29.9		
c3: Ho Chi Minh Port Charge	74.00	8.9		
c4: Ho Chi Minh Port THC	47.25	5.7		
c5: Ho Chi Minh Port-USWC (*5)	1,000.00	119.6		
c6: Generalized Barrier Cost	1,825.00	218.3		
	hours	JPY		
		(thousand)		
T2: Transportation Time (*6)	600	864.0		
C2: Route 2 Total		1,277.9	1.49525E-08	12.5%
Exp Total			1.19313E-07	

Source: JICA Study Team

\*1: Includes trucking cost and port charge.

\*2: 2,600 USD/FEU

\*3: 26d (PP-SV: 1, SV:3, SV-SG:2, SG:3, SG-USWC:17)

\*4: 500 USD/FEU

\*5: 2,000 USD/FEU

\*6: 25d (PP-HM:2, HM:3, HM-HK:3, HK3, HK-USWC:14)

Table 1.2 Demarcation at Year 2020

## (a) Sihanoukville port cost is highly improved

VTcarr		1.44			
theta		0.0141			
USD to JPY		119.6			
Route 1: Phnom Penh-Sihanoukville-USWC					
	USD	JPY	Exp	P	
		(thousand)			
c1: Phnom Penh City -Sihanoukville Port (*1) (*2)	309.42	37.0			
c2: Sihanoukville Port-USWC (*3)	1,170.00	139.9			
c3: Generalized Barrier Cost	100.00	12.0			
	hours	JPY			
		(thousand)			
T1: Transportation Time (*4)	624	898.6			
C1: Route 1 Total		1,087.5	2.19097E-07	77.2%	
Route 2 & 3: Phnom Penh-Ho Chi Minh-USWC					
	USD	JPY	Exp	P	
		(thousand)			
c1: Phnom Penh City-Phnom Penh Port (*1)	263.40	31.5			
c2: Phnom Penh Port-Ho Chi Minh Port	250.00	29.9			
c3 Ho Chi Minh Port Charge	74.00	8.9			
c4: Ho Chi Minh Port THC	47.25	5.7			
c5: Ho Chi Minh Port-USWC	1,000.00	119.6			
c6: Generalized Barrier Cost	1,825.00	218.3			
	hours	JPY			
		(thousand)			
T2: Transportation Time (*5)	528.00	760.3			
C2: Route 2 Total		1,174.2	6.45246E-08	22.8%	
Exp Total			2.83622E-07		

Source: JICA Study Team

\*1: Includes trucking cost and port charge.

\*2: (Base Year Value)\*0.5

\*3: (Base Year Value)\*0.9

\*4: 26d (PP-SV: 1, SV:3, SV-SG:2, SG:3, SG-USWC:17)

\*5: 22d (PP-HM:2, HM:3, HM-USWC:17)

## (b) Sihanoukville port cost is moderately improved

VTcarr		1.44		
theta		0.0141		
USD to JPY		119.6		
Route 1: Phnom Penh-Sihanoukville-USWC				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh City -Sihanoukville Port (*1) (*2)	309.42	37.0		
c2: Sihanoukville Port-USWC (*3)	1,300.00	155.5		
c3: Generalized Barrier Cost	100.00	12.0		
	hours	JPY		
		(thousand)		
T1: Transportation Time (*4)	624	898.6		
C1: Route 1 Total		1,103.1	1.75837E-07	73.2%
Route 2 & 3: Phnom Penh-Ho Chi Minh-USWC				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh City-Phnom Penh Port (*1)	263.40	31.5		
c2: Phnom Penh Port-Ho Chi Minh Port	250.00	29.9		
c3 Ho Chi Minh Port Charge	74.00	8.9		
c4: Ho Chi Minh Port THC	47.25	5.7		
c5: Ho Chi Minh Port-USWC	1,000.00	119.6		
c6: Generalized Barrier Cost	1,825.00	218.3		
	hours	JPY		
		(thousand)		
T2: Transportation Time (*5)	528	760.3		
C2: Route 2 Total		1,174.2	6.45246E-08	26.8%
Exp Total			2.40361E-07	

Source: JICA Study Team

\*1: Includes trucking cost and port charge.

\*2: (Base Year Value)\*0.5

\*3: (Base Year Value)\*1.0

\*4: 26d (PP-SV: 1, SV:3, SV-SG:2, SG:3, SG-USWC:17)

\*5: 22d (PP-HM:2, HM:3, HM-USWC:17)

## (c) Sihanoukville port cost is not improved

VTcarr		1.44			
theta		0.0141			
USD to JPY		119.6			
Route 1: Phnom Penh-Sihanoukville-USWC					
	USD	JPY	Exp	P	
		(thousand)			
c1: Phnom Penh City -Sihanoukville Port (*1) (*2)	618.84	74.0			
c2: Sihanoukville Port-USWC (*3)	1,300.00	155.5			
c3: Generalized Barrier Cost	100.00	12.0			
	hours	JPY			
		(thousand)			
T1: Transportation Time (*4)	624	898.6			
C1: Route 1 Total		1,140.1	1.04361E-07	61.8%	
Route2: Phnom Penh-Ho Chi Minh-USWC					
	USD	JPY	Exp	P	
		(thousand)			
c1: Phnom Penh City-Phnom Penh Port (*1)	263.40	31.5			
c2: Phnom Penh Port-Ho Chi Minh Port	250.00	29.9			
c3 Ho Chi Minh Port Charge	74.00	8.9			
c4: Ho Chi Minh Port THC	47.25	5.7			
c5: Ho Chi Minh Port-USWC	1,000.00	119.6			
c6: Generalized Barrier Cost	1,825.00	218.3			
	hours	JPY			
		(thousand)			
T2: Transportation Time (*5)	528.00	760.3			
C2: Route 2 Total		1,174.2	6.45246E-08	38.2%	
Exp Total			1.68886E-07		

Source: JICA Study Team

\*1: Includes trucking cost and port charge.

\*2: (Base Year Value)\*1.0

\*3: (Base Year Value)\*1.0

\*4: 26d (PP-SV: 1, SV:3, SV-SG:2, SG:3, SG-USWC:17)

\*5: 22d (PP-HM:2, HM:3, HM-USWC:17)

Cost and time imputed for the logit model is summarized as follows.

**Table 1.3 Summary of Cost and Time for Logit Model**

		2005	2020 (High)	2020 (Middle)	2020 (Low)
Route 1: Phnom Penh-Sihanoukville-USWC	Cost (USD)	2,018.84	1,579.42	1,709.42	2,018.84
	Real Cost (USD)	1,918.84	1,479.42	1,609.42	1,918.84
	Barrier Cost (USD)	100.00	100.00	100.00	100.00
	Time (hours)	624	624	624	624
Route 2 & 3: Phnom Penh-Ho Chi Minh-USWC	Cost (USD)	3,459.65	3,459.65	3,459.65	3,459.65
	Real Cost (USD)	1,634.65	1,634.65	1,634.65	1,634.65
	Barrier Cost (USD)	1,825.00	1,825.00	1,825.00	1,825.00
	Time (hours)	600	528	528	528

Source: JICA Study Team

(2) Demarcation between the Mekong River (Route 2a) and National Road No. 1 (Route 3a)

(a) Port Cost

Port cost of Phnom Penh port in the present situation is cited from Table 14.1.3 in Section 14.1.2.

(b) Inland Waterway Transportation Cost

According to interviews with organizations concerned, inland waterway transportation cost is approximately 500 USD/FEU for Phnom Penh—Ho Chi Minh.

(c) Trucking Transportation Cost

According to interviews with organizations concerned, trucking transportation cost is approximately 650 USD/FEU for Phnom Penh City—Ho Chi Minh City.

(d) Transportation Time

According to interviews with organizations concerned, transportation time is approximately 48 hours for Route 2a and 8 hours for Route 3a.

Transportation time for Route 2a at 2020 is estimated as 24 hours, corresponding to time cutting factors such as facilitation of border-crossing procedure by implementation of bilateral agreement and implementation of night navigation in the Mekong River.

Transportation time of Route 3a at year 2020 is set to be unchanged because the reduction by improvement of National Road No. 1 and development of the second Mekong River bridge may be balanced by the route extension from Ho Chi Minh to Cai Mep—Thi Vai area.

(e) Barrier cost

To meet the present demarcation, barrier cost is estimated as 100 USD/TEU for Route 2a and 2,035 USD/TEU for Route 3a. Barrier cost is barriers against cross border transport, which is expressed as a monetary value.

Barrier cost of for Route 3a at 2020 is set to be 50% of the base year's value, corresponding to possible progress in bilateral agreements and improvement of National Road No.1.

Table 1.4 Demarcation at Base Year (2005)

VTcarr	1.44			
theta	0.0141			
USD to JPY	119.6			
Route 2a: Phnom Penh-Mekong River-Ho Chi Minh				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh City-Phnom Penh Port (*1)	263.40	31.5		
c2: Phnom Penh Port-Ho Chi Minh Port (*2)	250.00	29.9		
c3: Generalized Barrier Cost	100.00	12.0		
	hours	JPY		
		(thousand)		
T2a: Transportation Time	48	69.1		
C2a: Route 1 Total		142.5	0.134089204	89.4%
Route 3a: Phnom Penh-NR 1-Ho Chi Minh				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh-Ho Chi Minh (*3)	325.00	38.9		
c2: Generalized Barrier Cost	2,035.00	243.4		
	hours	JPY		
		(thousand)		
T3a: Transportation Time	8	11.5		
C3a: Route 3a Total		293.8	0.015881823	10.6%
Exp Total			0.149971027	

Source: JICA Study Team

\*1: Includes trucking cost and port charge.

\*2: 500 USD/FEU

\*3: 625 USD/FEU

**Table 1.5 Demarcation at Year 2020**

VTcarr	1.44			
theta	0.0141			
USD to JPY	119.6			
<b>Route 2a: Phnom Penh-Mekong River-Ho Chi Minh</b>				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh City-Phnom Penh Port (*1)	263.40	31.5		
c2: Phnom Penh Port-Ho Chi Minh Port	250.00	29.9		
c3: Generalized Barrier Cost	100.00	12.0		
	hours	JPY		
		(thousand)		
T2a: Transportation Time	24	34.6		
C2a: Route 1 Total		108.0	0.21810035	71.2%
<b>Route 3a: Phnom Penh-NR 1-Ho Chi Minh</b>				
	USD	JPY	Exp	P
		(thousand)		
c1: Phnom Penh-Ho Chi Minh	325.00	38.9		
c2: Generalized Barrier Cost (*2)	1,017.50	121.7		
	hours	JPY		
		(thousand)		
T3a: Transportation Time	8	11.5		
C3a: Route 3a Total		172.1	0.088335784	28.8%
Exp Total			0.306436134	

Source: JICA Study Team

\*1: Includes trucking cost and port charge.

\*2: (Base Year Value)\*0.5

Cost and time imputed for the logit model is summarized as follows.

**Table 1.6 Summary of Cost and Time for Logit Model**

		2005	2020
Route 2a Section: Phnom Penh-Mekong River-Ho Chi Minh	Cost (USD)	613.40	613.40
	Real Cost (USD)	513.40	513.40
	Barrier Cost (USD)	100.00	100.00
	Time (hours)	48	24
Route 3a Section: Phnom penh-NR 1-Ho Chi Minh	Cost (USD)	2,360.00	1,342.50
	Real Cost (USD)	325.00	325.00
	Barrier Cost (USD)	2,035.00	1,017.50
	Time (hours)	8	8

Source: JICA Study Team



