－　この地域は将来の都市域として高いポテンシャルを持っている。将来の人口及び土地利用に関する予備調査によれば、ＤＮＤの人口は45万人（1990年）から 130万人（2010年）に増加すると予想している。

－　計画は技術的に実施可能であり、経済・社会及び環境上も効果が高い。

－　当地域は集中的開発が期待され、洪水防御と排水改善は地域振興に不可欠である。

（ナラヤンガンジ西部）

－　ラキア川右岸に位置し、川沿いに商業地域及び工業地帯が発達し、高い人口密度を示している。将来人口及び土地利用の予備調査によれば、地域の人口（及び人口密度）は1990年の47万人（３５９人／ha）から2010年には93万人（５３９人／ha）になると予想している。

－　計画は技術的に実施可能であり、経済・社会及び環境上も効果が高い。

8.2　そ の 他

(1) 大ダッカ西部の洪水対策施設の補修改善の作業の早期実施は極めて緊急である。

(2) 適切な洪水及び排水施設の維持管理は不可欠であり、計画の安全性は非常に重要である。維持管理計画を作成すべきであり、適正な管理を実施するには、適正なトレーニングを受けたスタッフが必要である。

(3) 基本計画の対策施設や無施設対策をスムーズに実施し、土地利用の規制を効果的に実行するためには、かなりの権限と管理能力を持った強力な実施機関及び組織の設置を勧告する。

(4) 環境管理のために表流水、地下水及び大気の環境モニターシステムの設立を勧告する。適切なモニターシステムなしには、法律や規制基準は無用となる。

(5) 都市の生活環境に関連する基礎的公衆衛生の改善のため、下記の実施を勧告する。

- 個別処理のサービス水準改善計画の策定
- 廃棄物の衛生的埋立に関する規制計画の策定
- 生活環境条件及びスラムの移転のための改善計画の策定
- 基本的公衆衛生の供給により都市化に対応するため、上水、下水、衛生設備の拡張及び固形廃棄物処理の基本計画の策定及び実施

表 S.1　排水区域別提案施設一覧表

Area	Flood Mitigation			Stormwater Drainage		
1. Greater Dhaka						
1) West	a) Embankment (R)	:	16.7 km	a) Pump Station (No.)	:	73.2 m3/s (2plcs)
	b) Flood wall (R)	:	4.7 km	b) Khal Improvement	:	42.7 km
	c) Embankment	:	6.3 km	c) Drainage Pipe	:	8.1 km
	d) Flood Wall	:	3.0 km	d) Retarding Pond	:	770.0 ha
	e) Sluice Gate	:	11 plcs	e) Land Acquisition	:	43.7 ha
	f) Land Acquisition	:	37.0 ha			
2) East	a) Embankment	:	26.7 km	a) Pump Station (No.)	:	179.1 m3/s (3plcs)
	b) Sub Embankment	:	11.3 km	b) Khal Improvement	:	72.4 km
	c) Sluice Gate	:	5 plcs	c) Drainage pipe	:	8.9 km
	d) Land Acquisition	:	317.4 ha	d) Retarding Pond	:	1,884.0 ha
				e) Land Acquisition	:	168.0 ha
2.Narayanganj						
1)DND Area	a) Flood Wall (R)	:	20.2 km	a) Pump Station (No.)	:	50.2 m3/s (1plcs)
	b) Flood Wall	:	10.0 km	b) Khal Improvement	:	38.0 km
	c) Sluice Gate	:	2 plcs	c) Retarding Pond	:	681.0ha
	d) Land Acquisition	:	5.8 ha	d) Land Acquisition	:	90.8 ha
2) West	a) Embankment	:	6.1 km	a) Pump Station (No.)	:	16.2 m3/s (3plcs)
	b) Road-Cum-Embankment	:	4.3 km	b) Khal Improvement	:	6.4 km
	c) Flood Wall	:	10.5 km	c) Retarding Pond	:	170.0 ha
	d) Sluice Gate	:	7 plcs	d) Land Acquisition	:	12.2 ha
	e) Land Acuqisition	:	61.5 ha			
	% Evacuation Facilities		1 L.S			
3) East	a) Embankment	:	6.6 km	a) Pump Station (No.)	:	12.5 m3/s (4plcs)
	b) Road-Cum-Embankment	:	6.5 km	b) Khal Improvement	:	7.4 km
	c) Flood Wall	:	26.0 km	c) Retarding Pond	:	130.0 ha
	d) Sluice Gate	:	12 plcs	d) Land Acquisition	:	14.1 ha
	e) Land Acquisition	:	99.2 ha			
3. Tongi	a) Embankment	:	13.0 km	a) Pump Station (No.)	:	25.2 m3/s (2plcs)
	b) Road-Cum-Embankment	:	6.2 km	b) Khal Improvement	:	22.0km
	c) Flood Wall	:	2.2 km	c) Retarding Pond	:	265.0 ha
	d) Sluice Gate	:	7 plcs	d) Land Acquisition	:	42.5 ha
	e) Land Acquisition	:	100.9 ha			
	% Evacuation Facilities	:	1 L.S			
4.Savar	a) Embankment	:	9.3 km	a) Khal Improvement	:	30.0 km
	b) Sluice Gate	:	3 plcs	b) Land Acquisition	:	66.2 ha
	c) Land Acquisition	:	62.3 ha			
	% Evacuation Facilities	:	1 L.S			
5. Keraniganj	a) Embankment	:	23.3 km	a) Pump Station (No.)	:	27.7 m3/s (1plcs)
	b) Flood Wall	:	3.7 km	b) Khal Improvement	:	22.5 km
	c) Sluice Gate	:	10 plcs	c) Retarding Pond	:	292.0 ha
	d) Land Acquisition	:	163.7 ha	d) Land Acquisition	:	50.6 ha
	% Evacuation Facilities	:	1 L.S			

Note : 1) Embankment (R) : Rehabilitation Work of Embankment
2) Flood Wall (R) : Rehabilitation Work of Flood Wall
3) Land Acquisition : Retarding Pond is not included
4) Pump station (No.) : Total Capacity (Number of Pump Station)
5) On-Going Projects by JICA and IBRD are not included.

表 S.2(1)　幹線排水路の計画排水流量

Block No.	Drainage Area (km2)	Velocity (m/s)	Time of Concentration (min)	Rainfall Intensity (mm/hr)	Run-off Coefficient	Areal Reduction Factor	Run-Off (m3/s)
Buriganga River Left Bank Zone (DA)							
DA-1	6.96	0.80	97.73	60.96	0.40	0.96	45.25
Turag River Left Bank Zone (DB)							
DB-1	5.88	0.80	91.44	63.67	0.40	0.96	39.93
DB-2	7.48	0.80	100.58	59.80	0.40	0.95	47.22
DB-3	6.33	0.80	94.13	62.48	0.40	0.96	42.19
DB-4	22.89	0.80	160.96	42.69	0.40	0.90	97.71
DB-5	13.88	0.80	129.77	50.09	0.40	0.93	71.85
DB-6	23.95	0.80	164.19	42.04	0.40	0.90	100.69
DB-7	57.21	0.80	242.85	30.75	0.40	0.81	158.33
DB-8	3.63	0.80	76.13	71.39	0.40	0.98	28.22
Balu River Right Bank Zone (DC-1)							
DC-1-1	5.79	0.80	90.89	63.91	0.40	0.96	39.47
DC-1-2	16.84	0.80	140.91	47.17	0.40	0.92	81.20
DC-1-3	5.78	0.80	90.83	63.94	0.40	0.96	39.42
DC-1-4	9.75	0.80	112.00	55.59	0.40	0.94	56.61
DC-1-5	11.49	0.80	119.87	53.01	0.40	0.94	63.62
DC-1-6	35.57	0.80	195.72	36.65	0.40	0.85	123.11
DC-1-7	5.21	0.80	87.25	65.61	0.40	0.97	36.84
DC-1-8	3.14	0.80	72.21	73.69	0.40	0.98	25.19
DC-1-9	1.94	0.80	61.04	81.10	0.40	0.99	17.31
Balu River Right Bank Zone (DC-2)							
DC-2-1	3.97	0.80	78.70	69.97	0.40	0.97	29.94
DC-2-2	4.94	0.80	85.48	66.47	0.40	0.97	35.39
DC-2-3	10.99	0.80	117.67	53.71	0.40	0.94	61.65
DC-2-4	3.22	0.80	72.87	73.29	0.40	0.98	25.70
DC-2-5	21.54	0.80	156.74	43.56	0.40	0.91	94.86
DC-2-6	3.04	0.80	71.37	74.19	0.40	0.98	24.56
DC-2-7	30.65	0.80	183.11	38.63	0.40	0.87	114.45
Balu River Right Bank Zone (DC-3)							
DC-3-1	8.81	1.00	87.83	65.33	0.40	1.00	66.65
DC-3-2	11.80	1.00	100.97	59.65	0.40	0.94	73.51
DC-3-3	17.64	0.80	143.74	46.48	0.40	0.92	83.81
DC-3-4	35.12	0.80	194.60	36.81	0.40	0.85	122.11
DC-3-5	5.36	0.80	88.21	65.15	0.40	0.97	37.64
DC-3-6	47.94	0.80	224.00	32.87	0.40	0.83	145.30
DC-3-7	6.59	1.00	86.67	65.89	0.42	1.00	52.17
DC-3-8	13.15	1.00	105.47	57.92	0.40	0.93	78.70
DC-3-9	7.39	0.80	100.09	60.00	0.40	0.95	46.80
DC-3-10	6.64	0.80	95.92	61.71	0.40	0.96	43.71
DC-3-11	16.99	0.80	141.44	47.04	0.40	0.92	81.69
DC-3-12	90.74	0.80	300.66	25.68	0.40	0.77	199.37
Tongi West Zone (TA)							
TA-1	4.13	0.80	79.88	69.34	0.40	0.97	30.86
TA-2	5.16	0.80	86.93	65.77	0.40	0.96	36.20
TA-3	3.86	0.80	77.89	70.41	0.40	0.97	29.29
TA-4	9.52	0.80	110.91	55.96	0.40	0.94	55.65
TA-5	2.28	0.80	64.49	78.65	0.40	0.99	19.73
TA-6	1.44	0.80	55.36	85.47	0.40	0.99	13.54
Tongi East Zone (TB)							
TB-1	4.64	0.80	83.46	67.47	0.40	0.97	33.74
TB-2	2.72	0.80	68.59	75.93	0.40	0.98	22.49
TB-3	8.17	0.80	104.21	58.39	0.40	0.95	50.36
TB-4	2.08	0.80	62.49	80.05	0.40	0.99	18.32
TB-5	0.81	0.80	46.52	93.30	0.40	1.00	8.40

表 S.2(2)　幹線排水路の計画排水流量

Block No.	Drainage Area (km2)	Velocity (m/s)	Time of Concentration (min)	Rainfall Intensity (mm/hr)	Run-off Coefficient	Areal Reduction Factor	Run-Off (m3/s)
Savar Zone (S)							
S-1	6.23	0.80	93.54	62.74	0.40	0.97	42.12
S-2	10.70	0.80	116.38	54.12	0.40	0.94	60.49
S-3	4.60	0.80	83.19	67.61	0.40	0.97	33.52
S-4	4.16	0.80	80.09	69.22	0.40	0.98	31.36
S-5	14.21	0.80	131.06	49.73	0.40	0.93	73.03
S-6	26.47	0.80	171.58	40.64	0.40	0.88	105.18
S-7	4.94	0.80	85.48	66.47	0.40	0.97	35.39
S-8	1.14	0.80	51.46	88.76	0.40	0.99	11.13
S-9	2.01	0.80	61.77	80.57	0.40	0.99	17.81
S-10	0.86	0.80	47.32	92.53	0.40	1.00	8.84
S-11	6.11	0.80	92.83	63.05	0.40	0.97	41.52
S-12	9.36	0.80	110.14	56.23	0.40	0.94	54.97
S-13	5.19	0.80	87.12	65.67	0.40	0.97	36.73
S-14	16.63	0.80	140.15	47.36	0.40	0.92	80.51
DND Project Area (NA-1)							
NA-1-1	6.81	0.80	96.89	61.31	0.40	0.96	44.53
NA-1-2	3.41	0.80	74.41	72.38	0.40	0.98	26.88
NA-1-3	17.68	0.80	143.88	46.45	0.40	0.92	83.94
NA-1-4	3.30	0.80	73.52	72.90	0.40	0.98	26.20
NA-1-5	24.42	0.80	165.60	41.77	0.40	0.90	102.00
NA-1-6	4.61	0.80	83.26	67.58	0.40	0.97	33.58
NA-1-7	30.17	0.80	181.83	38.84	0.40	0.87	113.28
DND Project Area (NA-2)							
NA-2-1	7.78	0.80	102.18	59.17	0.40	0.95	48.59
NA-2-2	2.36	0.80	65.26	78.13	0.40	0.98	20.08
NA-2-3	14.39	0.80	131.76	49.54	0.40	0.93	73.67
NA-2-4	4.54	0.80	82.78	67.82	0.40	0.97	33.19
NA-2-5	2.68	0.80	68.23	76.16	0.40	0.98	22.23
NA-2-6	11.18	0.80	118.51	53.44	0.40	0.94	62.40
NA-2-7	26.62	0.80	172.01	40.56	0.40	0.88	105.57
Narayanganj West Zone (NB)							
NB-1	2.45	0.80	66.12	77.55	0.40	0.98	20.69
NB-2	5.52	0.80	89.22	64.68	0.40	0.96	38.08
NB-3	1.11	0.80	51.04	89.12	0.40	0.99	10.88
NB-4	2.41	0.80	65.74	77.80	0.40	0.98	20.42
NB-5	0.88	0.80	47.64	92.23	0.40	1.00	9.02
NB-6	3.57	0.80	75.67	71.66	0.40	0.97	27.57
NB-7	2.69	0.80	68.32	76.11	0.40	0.98	22.29
Narayanganj East Zone (NC)							
NC-1	1.02	0.80	49.76	90.27	0.40	0.99	10.13
NC-2	0.60	0.80	42.82	97.01	0.40	1.00	6.47
NC-3	3.27	0.80	73.28	73.05	0.40	0.98	26.01
NC-4	2.31	0.80	64.78	78.45	0.40	0.99	19.94
NC-5	1.92	0.80	60.82	81.25	0.40	0.99	17.16
NC-6	3.68	0.80	76.52	71.17	0.40	0.97	28.23
Keraniganj Zone (K)							
K-1	2.19	0.80	63.60	79.27	0.40	0.98	18.90
K-2	2.70	0.80	68.41	76.05	0.40	0.98	22.36
K-3	5.57	0.80	89.53	64.54	0.40	0.96	38.34
K-4	3.55	0.80	75.51	71.75	0.40	0.97	27.45
K-5	11.40	0.80	119.48	53.13	0.40	0.94	63.26
K-6	1.86	0.80	60.18	81.73	0.40	0.99	16.72
K-7	13.99	0.80	130.20	49.97	0.40	0.93	72.24
K-8	10.28	0.80	114.46	54.75	0.40	0.94	58.79

表 S.3　排水区域別ポンプ及び調整池の必要容量一覧表

Name of Area	Drainage Zone	Sub-Zone	Area (km^2)	Required Pump Capacity		Required Storage Volume of Retarding Pond		Remarks
				Specific ($m^3/s/km^2$)	Total (m^3/s)	Specific ($x10^6\ m^3/km^2$)	Total ($x10^6\ m^3$)	
Greater Dhaka	Buriganga River Left Bank Zone (DA)	PD-1(Kamrangi Char)	6.96	1.14	8.0	0.12	0.84	
		PD-2 (Old Dhaka)	6.75	3.29	22.2	0.03	0.21	World Bank Project
		PD-3 (Kallyanpur)	17.60	1.14	20.0	0.12	2.08	JICA Project
	Turag River Left Bank Zone (DB)	PD-4 (Northern Part)	57.19	1.14	65.2	0.12	6.86	
	Balu River Right Bank Zone (DC)	PD-5 (Northern Part))	35.57	1.14	40.6	0.12	5.50	
		PD-6 (Central Part)	30.65	1.14	35.0	0.12	3.68	
		PD-7 (Southern Part)	90.74	1.14	103.5	0.12	10.89	
Tongi	Tongi West Zone (TA) PD-8		11.80	1.14	13.5	0.12	1.42	
	Tongi East Zone (TB) PD-9		10.25	1.14	11.7	0.12	1.23	
Narayanganj	DND Project Zone (NA)	PD-10 (Northern Part)	30.17	1.14	14.5	0.12	3.62	Existing P.S.
		PD-11 (Southern Part)	26.62	1.14	50.2	0.12	3.19	
	Narayanganj West Zone (NB)	PD-12	2.45	1.14	2.8	0.12	0.29	
		PD-13	5.52	1.14	6.3	0.12	0.66	
		PD-14	6.26	1.14	7.1	0.12	0.75	
	Narayanganj East Zone (NC)	PD-15	1.02	1.14	1.2	0.12	0.12	
		PD-16	3.87	1.14	4.4	0.12	0.46	
		PD-17	2.31	1.14	2.7	0.12	0.28	
		PD-18	3.68	1.14	4.2	0.12	0.44	
Keraniganj	Keraniganj Zone (K) PD-19		24.27	1.14	27.7	0.12	2.92	
Total			383.97	—	455.5	—	45.44	

表 S.4　地域別事業費一覧表

(Unit: million TK)

Project Area	G. Dhaka West			G. Dhaka East			Narayanganj DND			Narayanganj West		
	F/C	L/C	Total	F/C	L/C	Total	F/C	L/C	Total	F/C	L/C	Total
I. Structural Measures												
1) Construction Cost	2,746.2	2,163.3	4,909.5	6,217.6	5,384.5	11,602.1	1,460.7	1,064.0	2,524.7	697.8	552.3	1,250.1
2) Physical Contingency	686.6	540.8	1,227.4	1,554.4	1,346.1	2,900.5	365.2	266.0	631.2	174.4	138.1	312.5
3) Land Acquisition Cost	-	3,907.2	3,907.2	-	6,285.5	6,285.5	-	4,043.8	4,043.8	-	1,267.1	1,267.1
4) Engineering Cost	274.6	216.4	491.0	621.8	538.4	1,160.2	146.1	106.4	252.5	69.8	55.2	125.0
5) Administration Cost	-	147.3	147.3	-	348.1	348.1	-	75.7	75.7	-	37.5	37.5
6) Previous/On-going Projects	-	-	(3,351.2)	-	-	(226.1)	-	-	(138.5)	-	-	-
Sub-Total	3,707.4	6,975.0	10,682.4	8,393.8	13,902.6	22,296.4	1,972.0	5,555.9	7,527.9	942.0	2,050.2	2,992.2
			(3,351.2)			(226.1)			(138.5)			
II. Non-Structural Measures												
1) Construction Cost	-	-	-	-	-	-	-	-	-	10.0	15.0	25.0
2) Physical Contingency	-	-	-	-	-	-	-	-	-	2.5	3.8	6.3
3) Land Acquisition Cost	-	-	-	-	-	-	-	-	-	-	5.7	5.7
4) Engineering Cost	-	-	-	-	-	-	-	-	-	1.0	1.5	2.5
5) Administration Cost	-	-	-	-	-	-	-	-	-	-	0.8	0.8
Sub-Total										13.5	26.8	40.3
Total	3,707.4	6,975.0	10,682.4	8,393.8	13,902.6	22,296.4	1,972.0	5,555.9	7,527.9	955.5	2,077.0	3,032.5
			(3,351.2)			(226.1)			(138.5)			

Project Area	Narayanganj East			Tongi			Savar			Keraniganj		
	F/C	L/C	Total	F/C	L/C	Total	F/C	L/C	Total	F/C	L/C	Total
I. Structural Measures												
1) Construction Cost	932.0	781.8	1,713.8	1,129.4	966.0	2,095.4	644.3	755.1	1,399.4	1,659.4	1,676.6	3,336.0
2) Physical Contingency	233.0	195.5	428.5	282.4	241.5	523.9	161.1	188.8	349.9	414.9	419.1	834.0
3) Land Acquisition Cost	-	1,265.0	1,265.0	-	1,102.8	1,102.8	-	282.7	282.7	-	1,721.3	1,721.3
4) Engineering Cost	93.2	78.2	171.4	112.9	96.6	209.5	64.4	75.5	139.9	165.9	167.7	333.6
5) Administration Cost	-	51.4	51.4	-	62.9	62.9	-	42.0	42.0	-	100.1	100.1
6) Previous/On-going Projects	-	-	-	-	-	-	-	-	-	-	-	-
Sub-Total	1,258.2	2,371.9	3,630.1	1,524.7	2,469.8	3,994.5	869.8	1,344.1	2,213.9	2,240.2	4,084.8	6,325.0
II. Non-Structural Measures												
1) Construction Cost	-	-	-	20.0	30.0	50.0	148.5	202.5	351.0	261.0	351.0	612.0
2) Physical Contingency	-	-	-	5.0	7.5	12.5	37.2	50.6	87.8	65.3	87.7	153.0
3) Land Acquisition Cost	-	-	-	-	5.9	5.9	-	28.1	28.1	-	73.4	73.4
4) Engineering Cost	-	-	-	2.0	3.0	5.0	14.9	20.2	35.1	26.1	35.1	61.2
5) Administration Cost	-	-	-	-	1.5	1.5	-	10.5	10.5	-	18.4	18.4
Sub-Total				27.0	47.9	74.9	200.6	311.9	512.5	352.4	565.6	918.0
Total	1,258.2	2,371.9	3,630.1	1,551.7	2,517.7	4,069.4	1,070.4	1,656.0	2,726.4	2,592.6	4,650.4	7,243.0

Grand Total (I)			59,662.4 (3,915.8)
Grand Total (I)+(II)			61,208.1 (3,915.8)

表 S.5　段階的事業実施計画プログラム

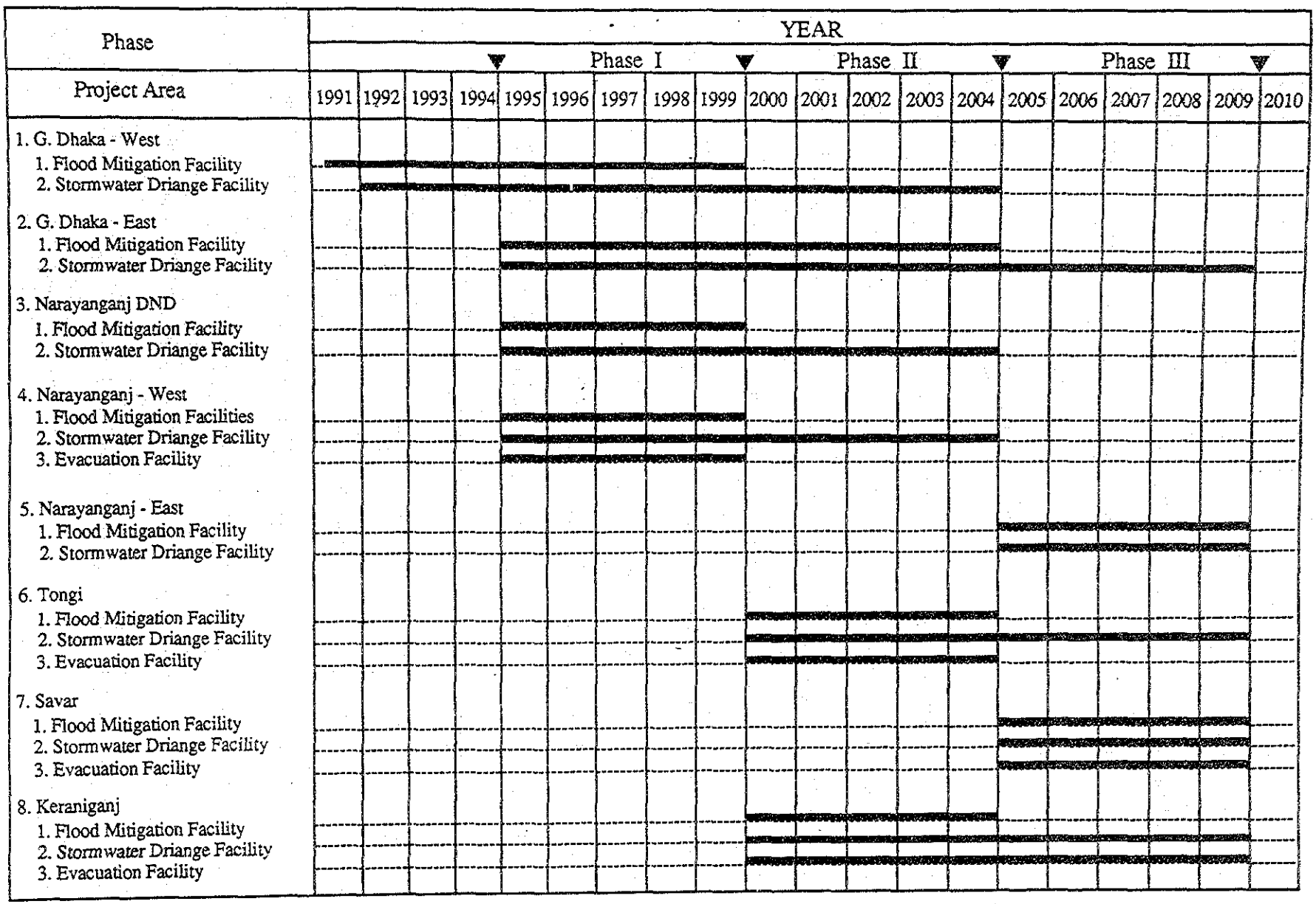


表 S.6　プロジェクトの総合評価一覧表

	Greater Dhaka		Narayanganj			Keraniganj	Savar	Tongi
	West 1/	East 2/	DND	West	East			
. EIRR (%)	18.3	12.3	14.2	13.7	7.4	10.0	-	11.8
	15.3		13.5					
NPV (Tk. Million)	4,433	149	363	177	-176	-263	-351	-24
	4,570		456					
B/C	1.52	1.02	1.16	1.14	0.69	0.85	0.23	0.98
	1.27		1.11					
Study Area (km2)	95.1	167.3	56.8	18.6	12.8	24.3	50.5	24.3
Social impact on .Built-up Area (km2) in 1990	50.6	68.6	21.7	13.1	7.5	7.4	20.6	10.3
. Population in 1990	2,264,000	2,178,000	449,000	470,000	131,000	221,000	131,000	138,009
. Population Density at Build-up area (Pop.ha)	447	317	207	359	175	298	63	134
Likely social impact on								
. New Develop Area (km2)	29.8	61.5	21.0	4.1	4.0	12.7	24.5	9.1
. Population in 2010	4,085,000	4,502,000	1,314,000	927,000	266,000	457,000	410,000	652,000
-Population Density	508	346	307	539	232	228	91	235
Environmental Adverse impact	not significant	not sig.	not sig.	not sig.	not sig.	not sig.	not sig.	not sig.
Evaluation 3/								
. Economic Efficiency	A	A	A	A	C	B	C	B
. Present Social Impact	A	A	B	A	C	B	C	B
. Future Social Impact	A	A	A	B	C	B	C	B
Area Priority	A	A	A	A	C	B	C	B

Note : 1) Greater Dhaka-West : Buriganga River/Turag River left bank zones
2) Greater Dhaka-East : Balu River left bank zone
3) Evaluation : High - Low
A B C

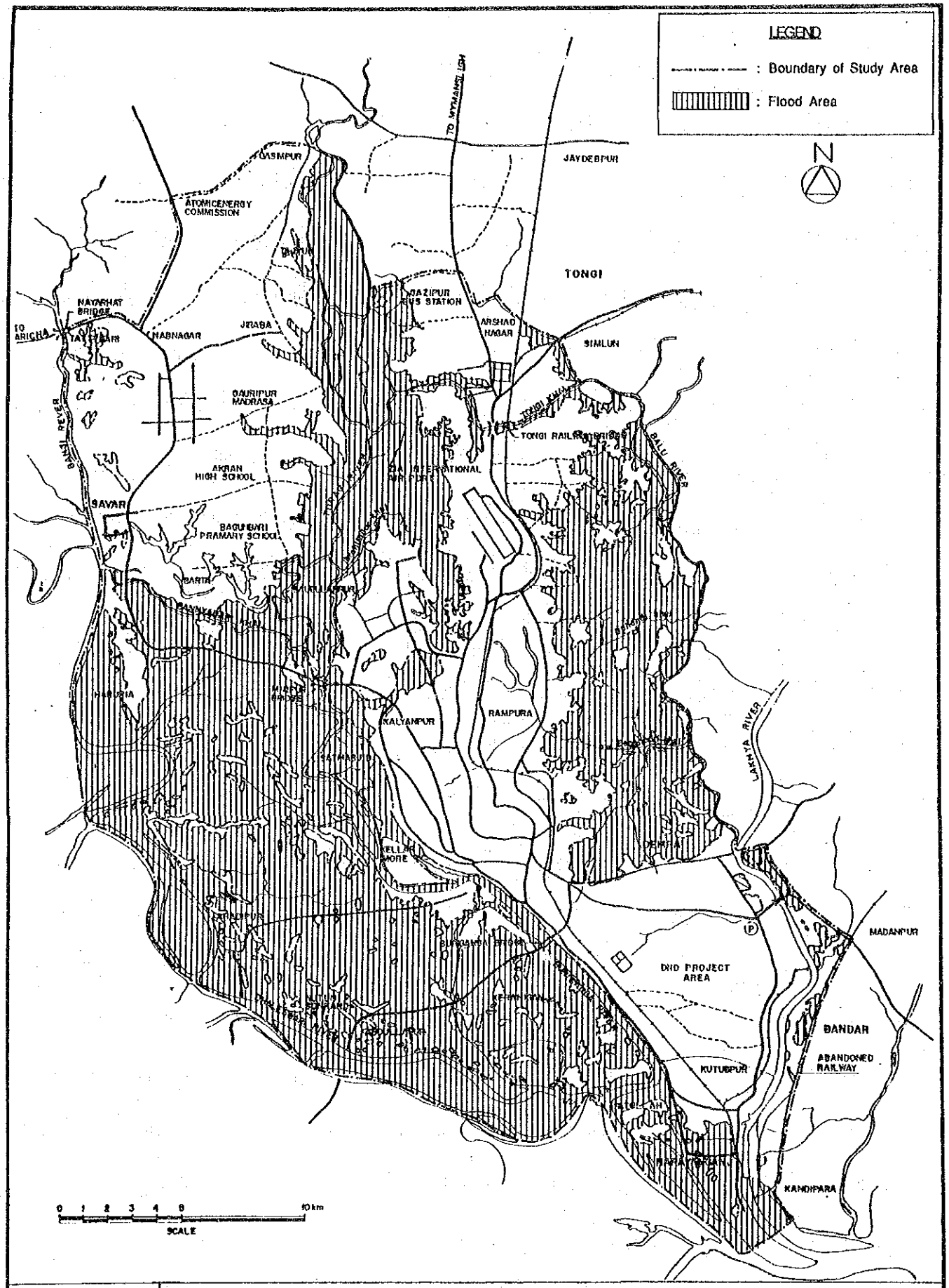


図 S.1	通年洪水による氾濫域図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

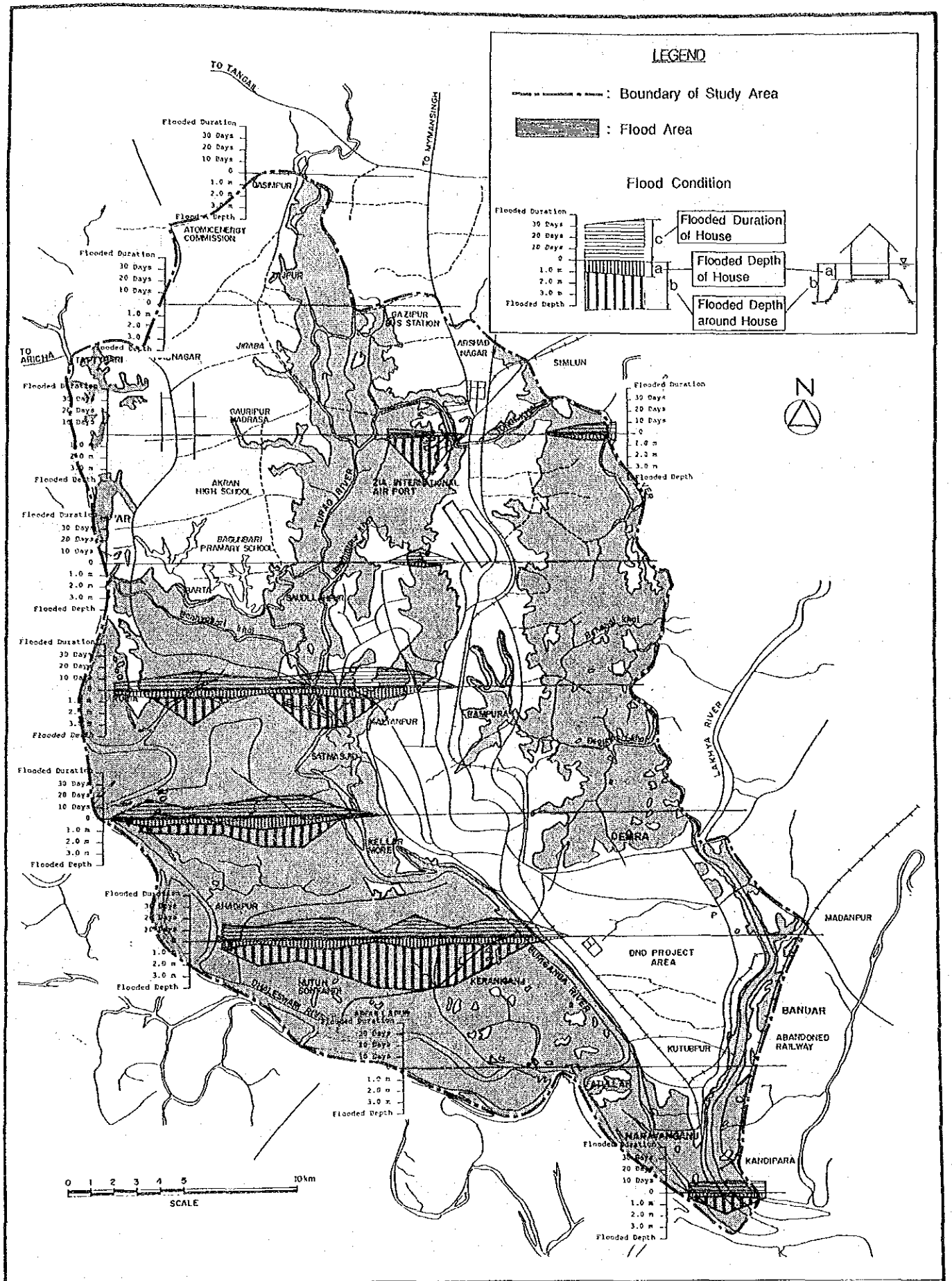


図 S. 2　　1987年洪水による氾濫域図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

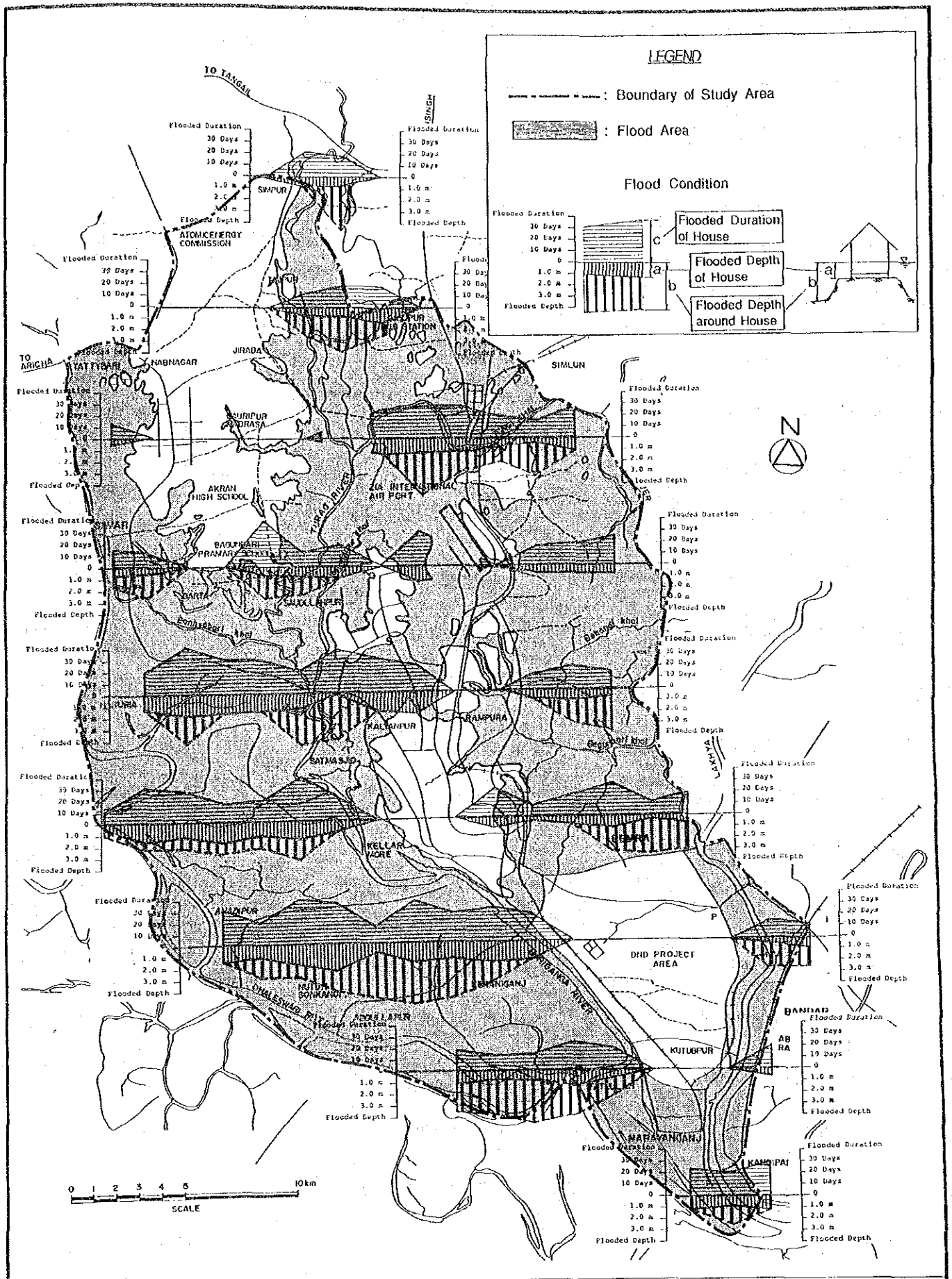


図 S. 3　　1988年洪水による氾濫域図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

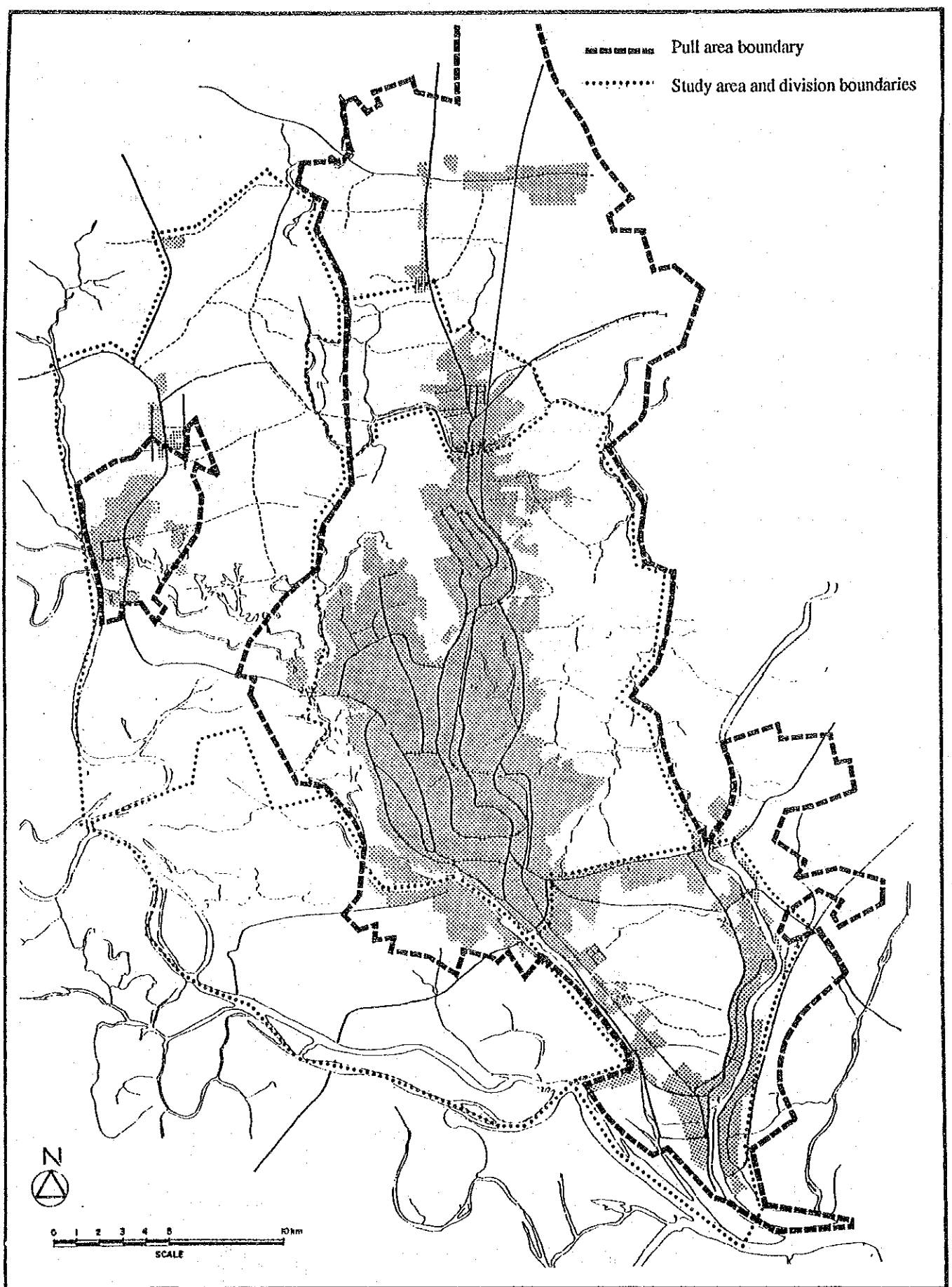


図 S.4　人口流入及び都市開発可能地域図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

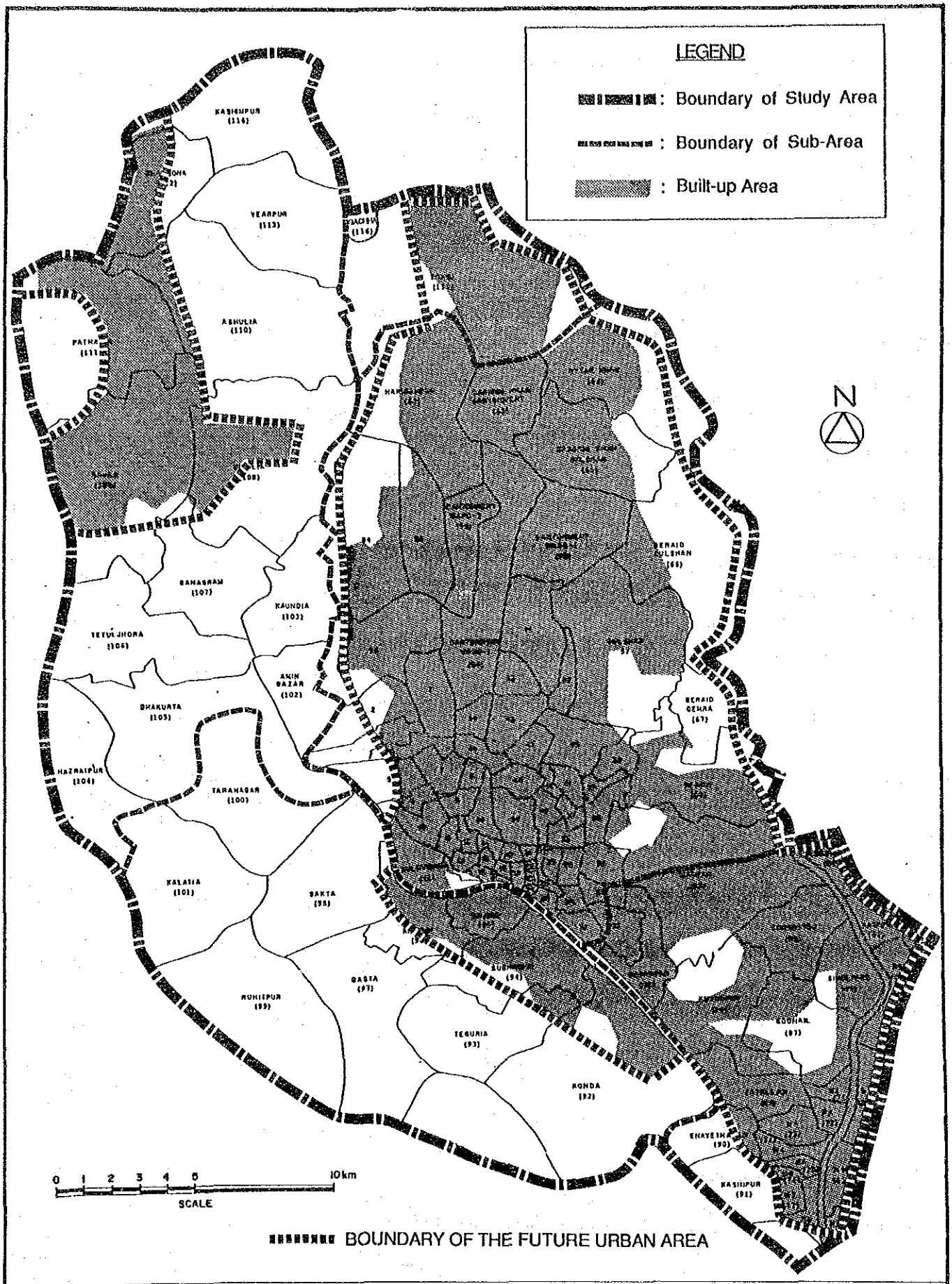


図 S.5	計画年2010年の都市開発地域図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

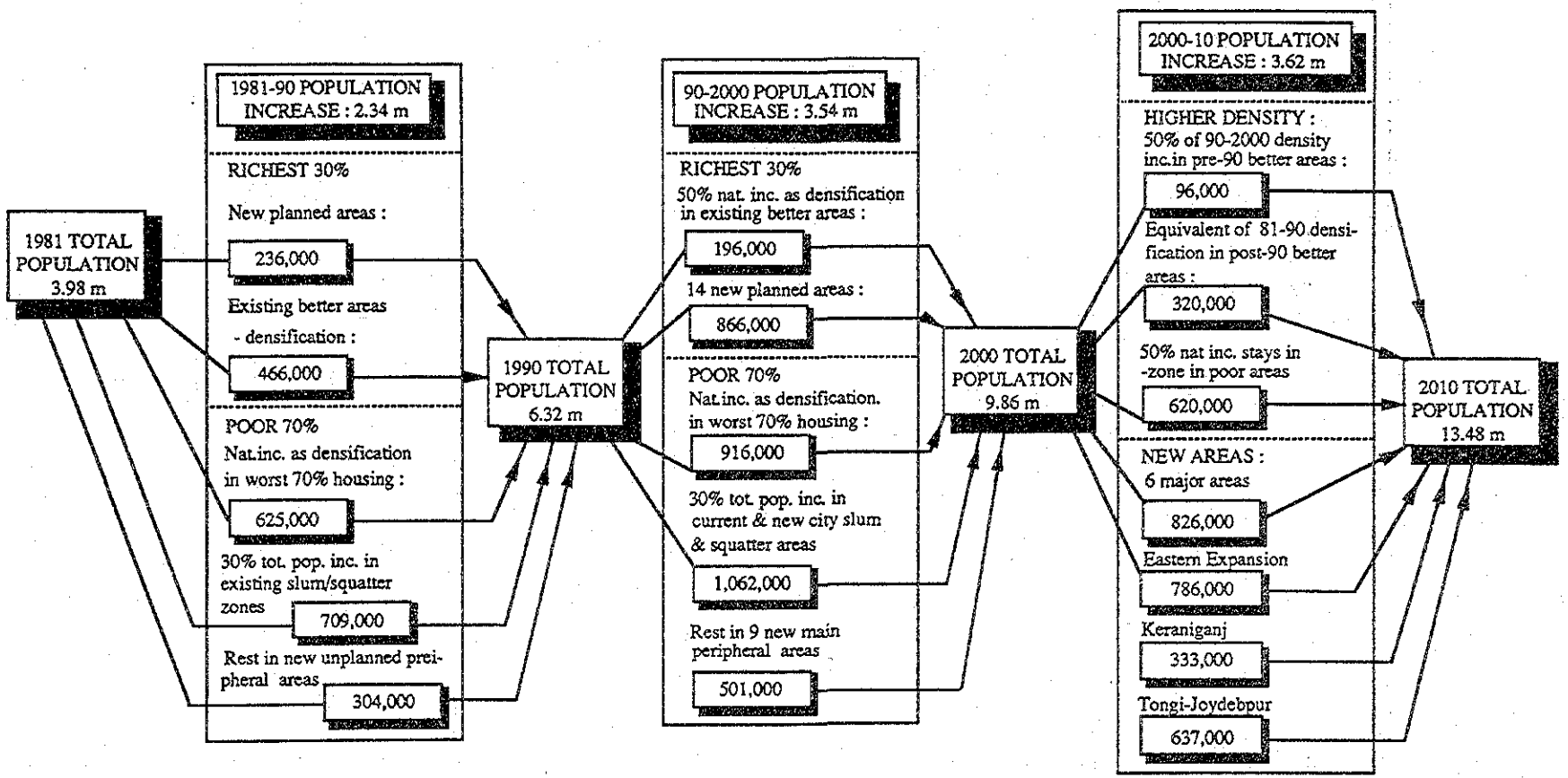


図 S.6 調査地域の将来人口予測

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

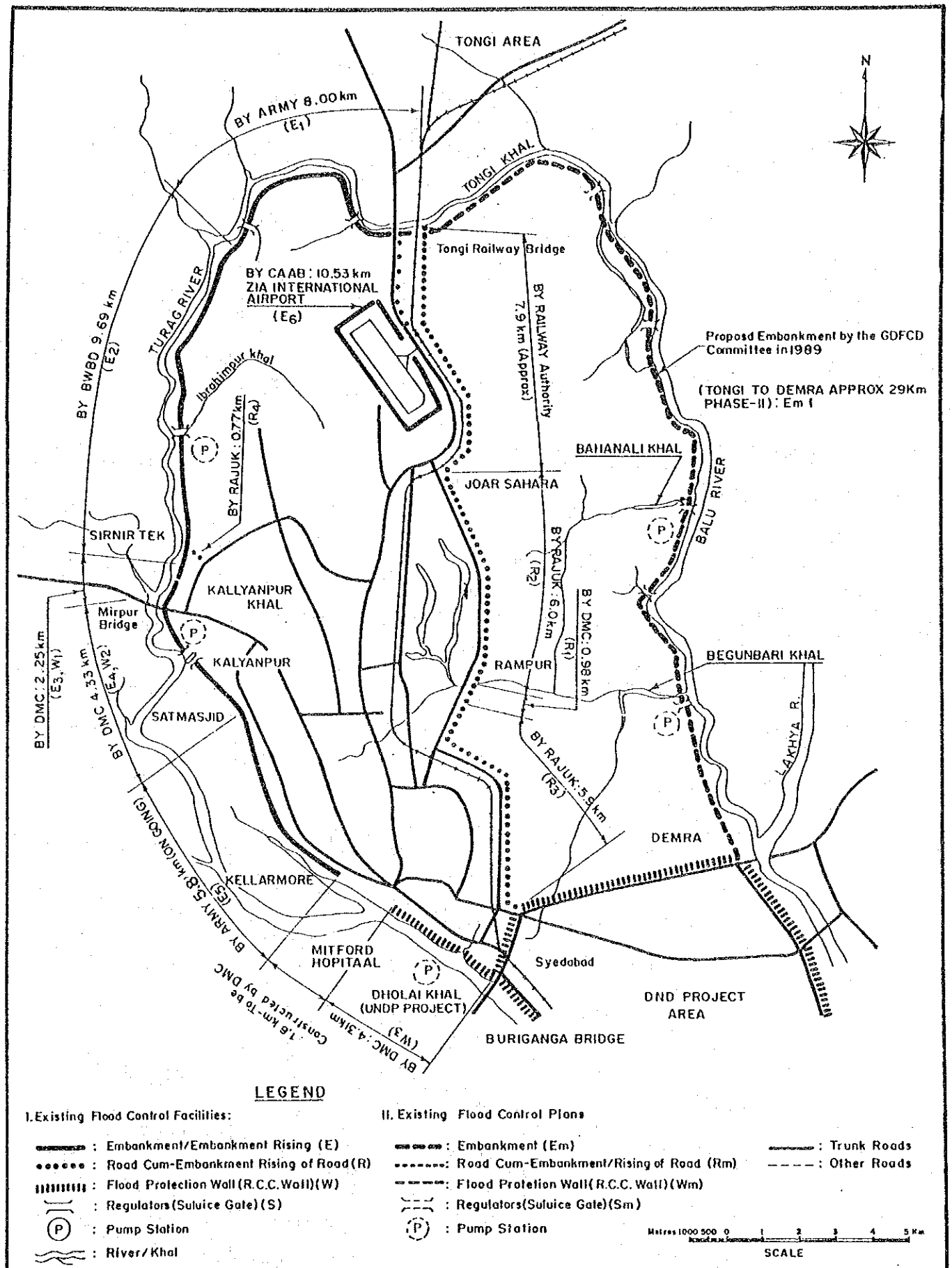
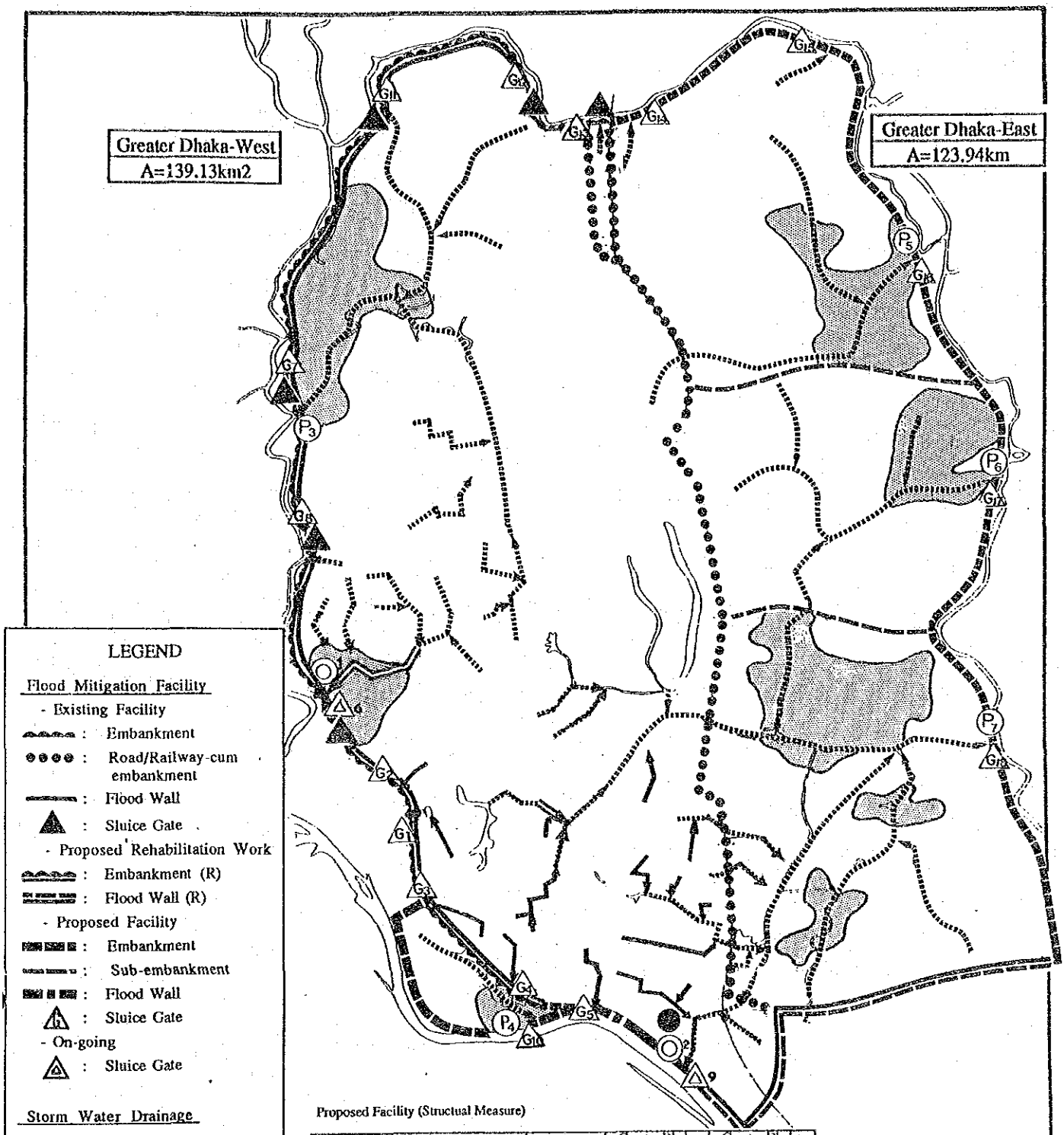


図 S.7 大ダッカ圏の現況洪水防御施設と既存計画

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH



Proposed Facility (Structual Measure)

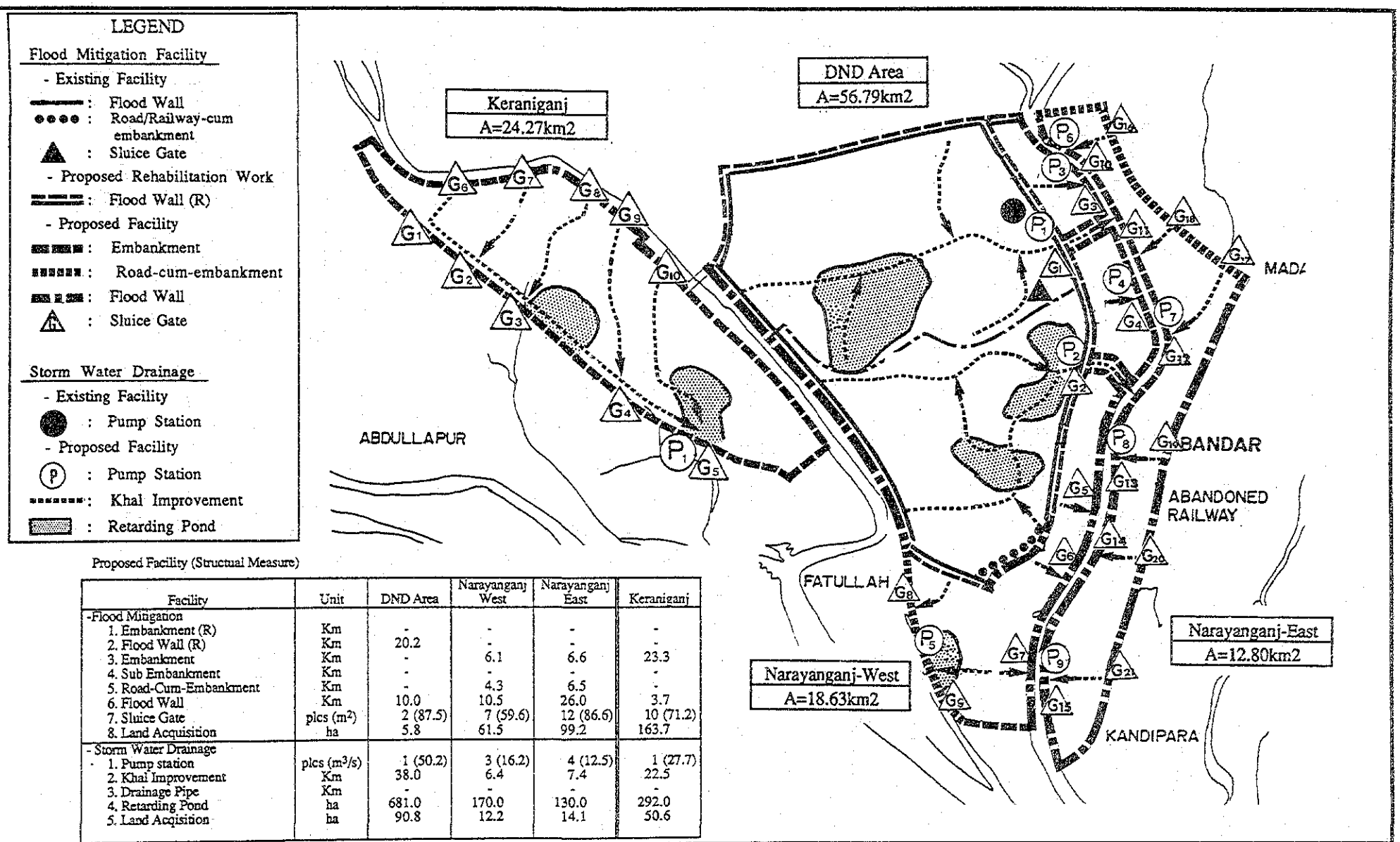
Facility	Unit	Greater Dhaka West	Greater Dhaka East
-Flood Mitigation			
1. Embankment (R)	Km	16.7	-
2. Flood Wall (R)	Km	4.7	-
3. Embankment	Km	6.3	26.7
4. Sub Embankment	Km	-	11.3
5. Road-Cum-Embankment	Km	-	-
6. Flood Wall	Km	3.0	-
7. Sluice Gate	plcs (m^2)	11 (162.8)	5 (199.5)
8. Land Acquisition	ha	37.0	317.4
- Storm Water Drainage			
1. Pump station	plcs (m^3/s)	2 (73.2)	3 (179.1)
2. Khal Improvement	Km	42.7	72.4
3. Drainage Pipe	Km	8.1	8.9
4. Retarding Pond	ha	770.0	1,884.0
5. Land Acqisition	ha	43.7	168.0

Note :
1) On-going projects by JICA and IBRD are not inclueded.
2) (R) : Rehabilitation Work

図 S.8 大ダッカ圏の洪水防御・雨水排水施設計画図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA



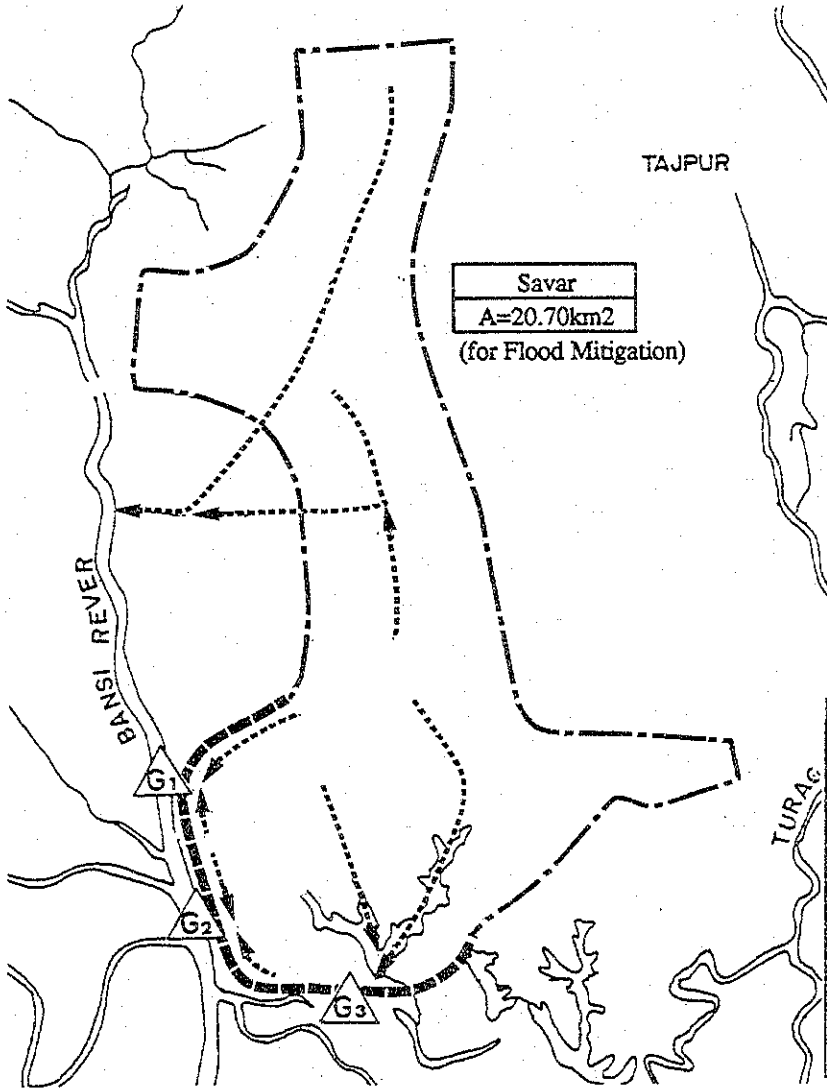
Proposed Facility (Structual Measure)

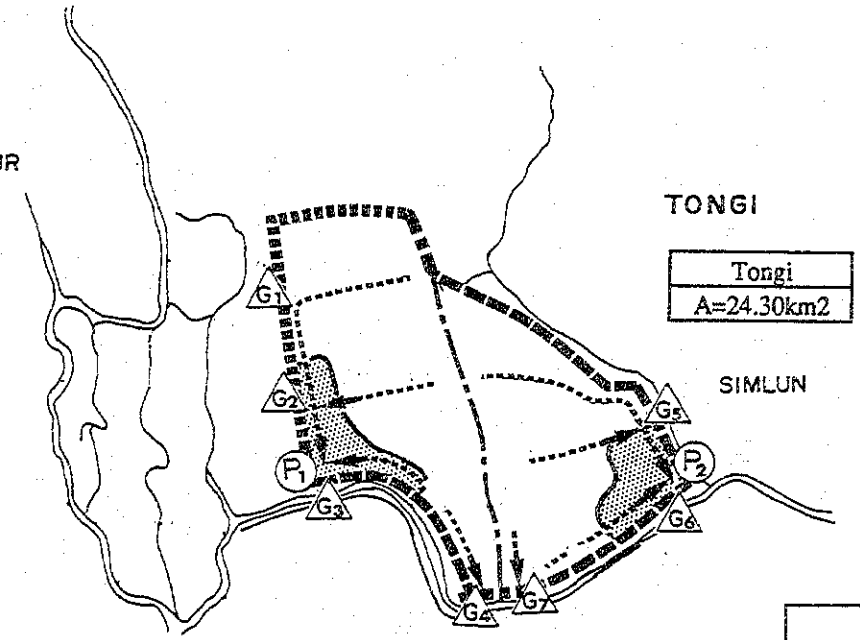
Facility	Unit	DND Area	Narayanganj West	Narayanganj East	Keraniganj
-Flood Mitigation					
1. Embankment (R)	Km	-	-	-	-
2. Flood Wall (R)	Km	20.2	-	-	-
3. Embankment	Km	-	6.1	6.6	23.3
4. Sub Embankment	Km	-	-	-	-
5. Road-Cum-Embankment	Km	-	4.3	6.5	-
6. Flood Wall	Km	10.0	10.5	26.0	3.7
7. Sluice Gate	plcs (m^2)	2 (87.5)	7 (59.6)	12 (86.6)	10 (71.2)
8. Land Acquisition	ha	5.8	61.5	99.2	163.7
- Storm Water Drainage					
1. Pump station	plcs (m^3/s)	1 (50.2)	3 (16.2)	4 (12.5)	1 (27.7)
2. Khal Improvement	Km	38.0	6.4	7.4	22.5
3. Drainage Pipe	Km	-	-	-	-
4. Retarding Pond	ha	681.0	170.0	130.0	292.0
5. Land Acqisition	ha	90.8	12.2	14.1	50.6

Note :
1) On-going projects by JICA and IBRD are not inclueded.
2) (R) : Rehabilitation Work

図 S.9 ナラヤンガンジ、ケラニガンジ地区の洪水防御・雨水排水施設計画図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH





Proposed Facility (Structual Measure)

Facility	Unit	Tongi	Savar
-Flood Mitigation			
1. Embankment (R)	Km	-	-
2. Flood Wall (R)	Km	-	-
3. Embankment	Km	13.0	9.3
4. Sub Embankment	Km	-	-
5. Road-Cum-Embankment	Km	6.2	-
6. Flood Wall	Km	2.2	-
7. Sluice Gate	plcs (m^2)	7 (73.4)	3 (57.3)
8. Land Acquisition	ha	100.9	62.3
- Storm Water Drainage			
1. Pump station	pics (m^3/s)	2 (25.2)	-
2. Khal Improvement	Km	22.0	30.0
3. Drainage Pipe	Km	-	-
4. Retarding Pond	ha	265.0	-
5. Land Acqisition	ha	42.5	66.2

Note :
1) On-going projects by JICA and IBRD are not inclueded.
2) (R) : Rehabilitation Work

LEGEND

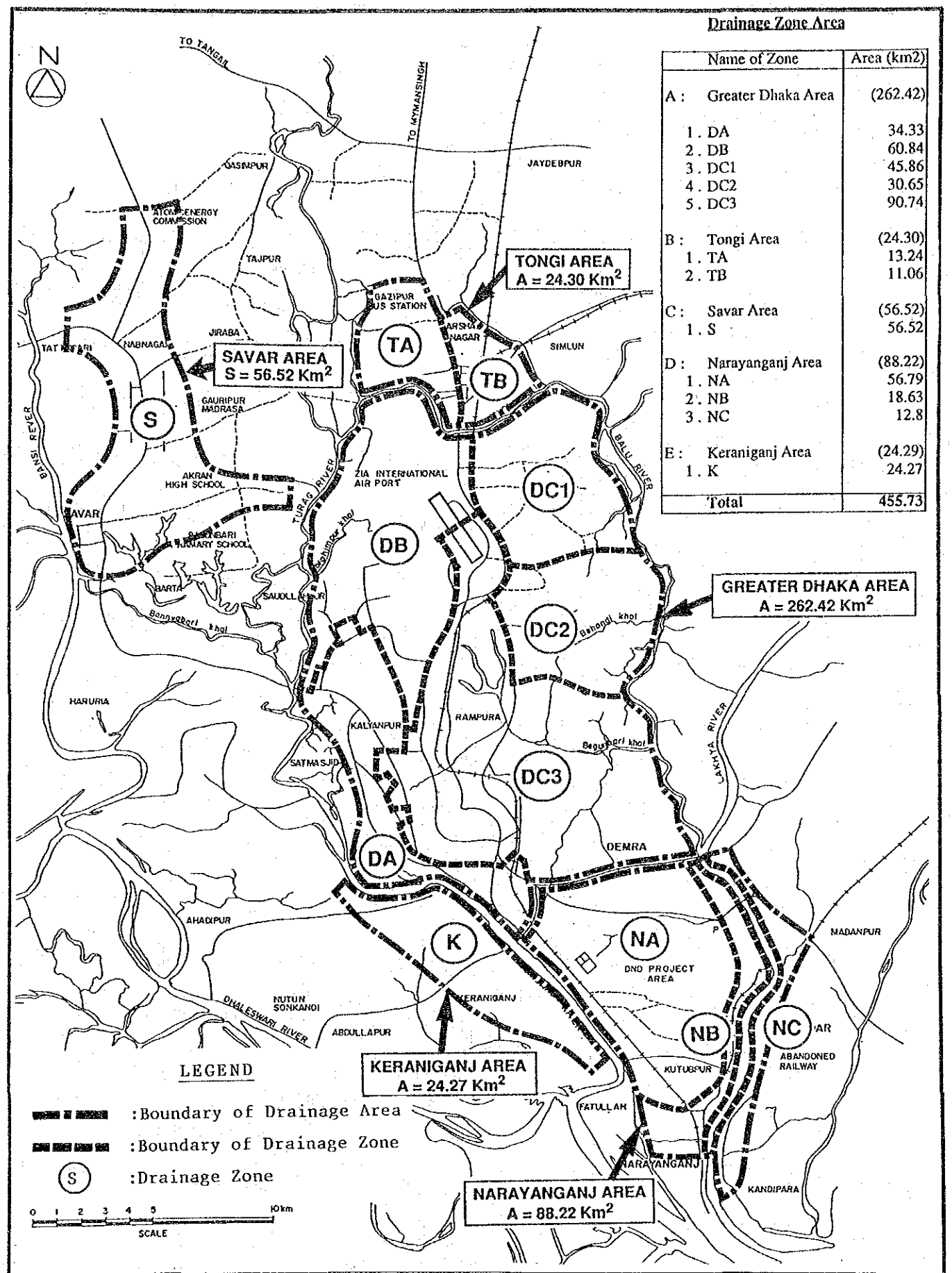
Flood Mitigation Facility
- Proposed Facility
: Embankment
: Road-cum-embankment
: Flood Wall
: Sluice Gate

Storm Water Drainage
- Proposed Facility
: Pump Station
: Khal Improvement
: Retarding Pond

: Boundary of Drainage Zone

図 S.10 トンギ、サバール地区の洪水防御・雨水排水施設計画図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH



Drainage Zone Area

Name of Zone	Area (km2)
A : Greater Dhaka Area	(262.42)
1 . DA	34.33
2 . DB	60.84
3 . DC1	45.86
4 . DC2	30.65
5 . DC3	90.74
B : Tongi Area	(24.30)
1 . TA	13.24
2 . TB	11.06
C : Savar Area	(56.52)
1 . S	56.52
D : Narayanganj Area	(88.22)
1 . NA	56.79
2 . NB	18.63
3 . NC	12.8
E : Keraniganj Area	(24.29)
1 . K	24.27
Total	455.73

図 S.11 雨水排水区域分割図

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

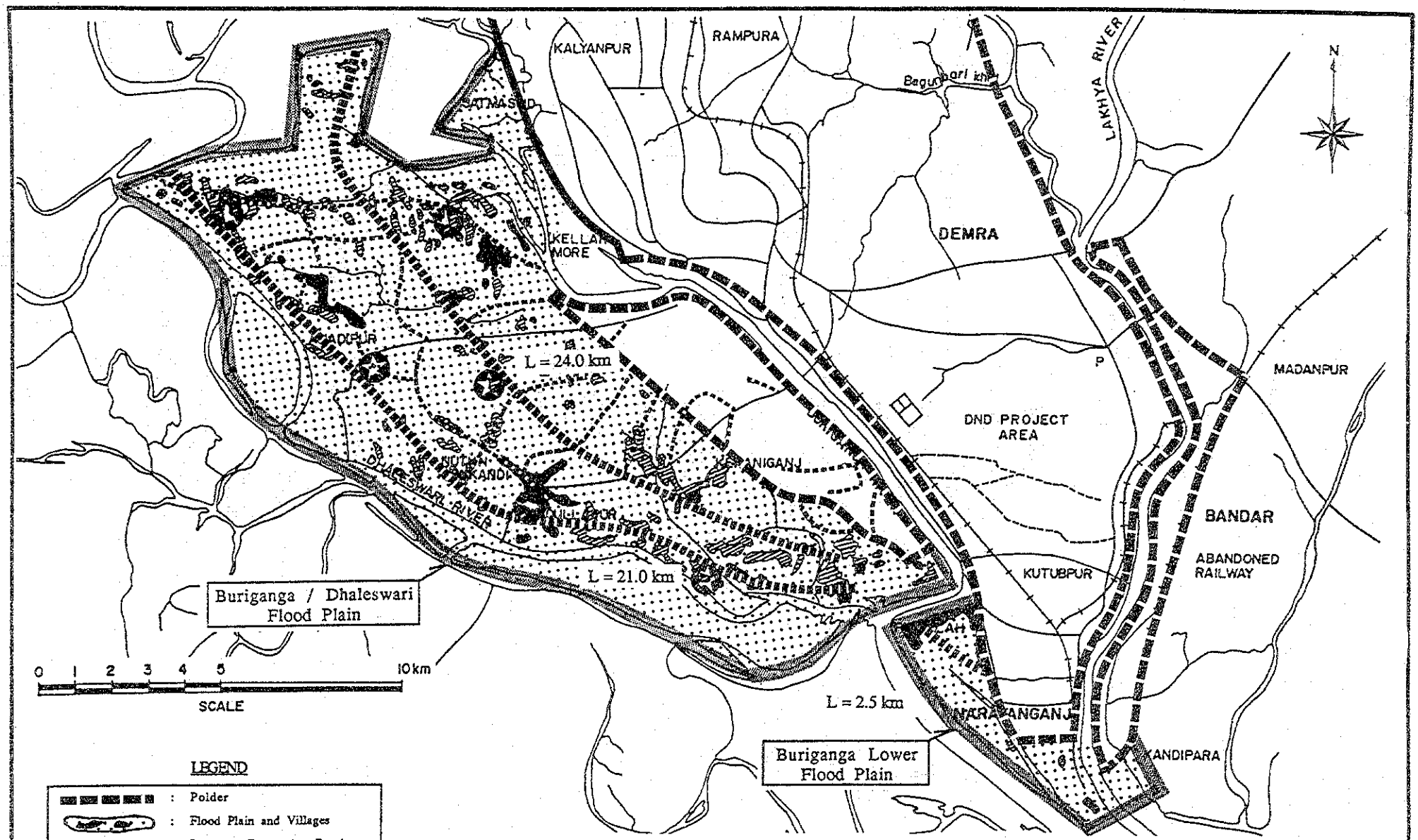


図 S.12(1) 洪水避難道路網と避難場所

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA

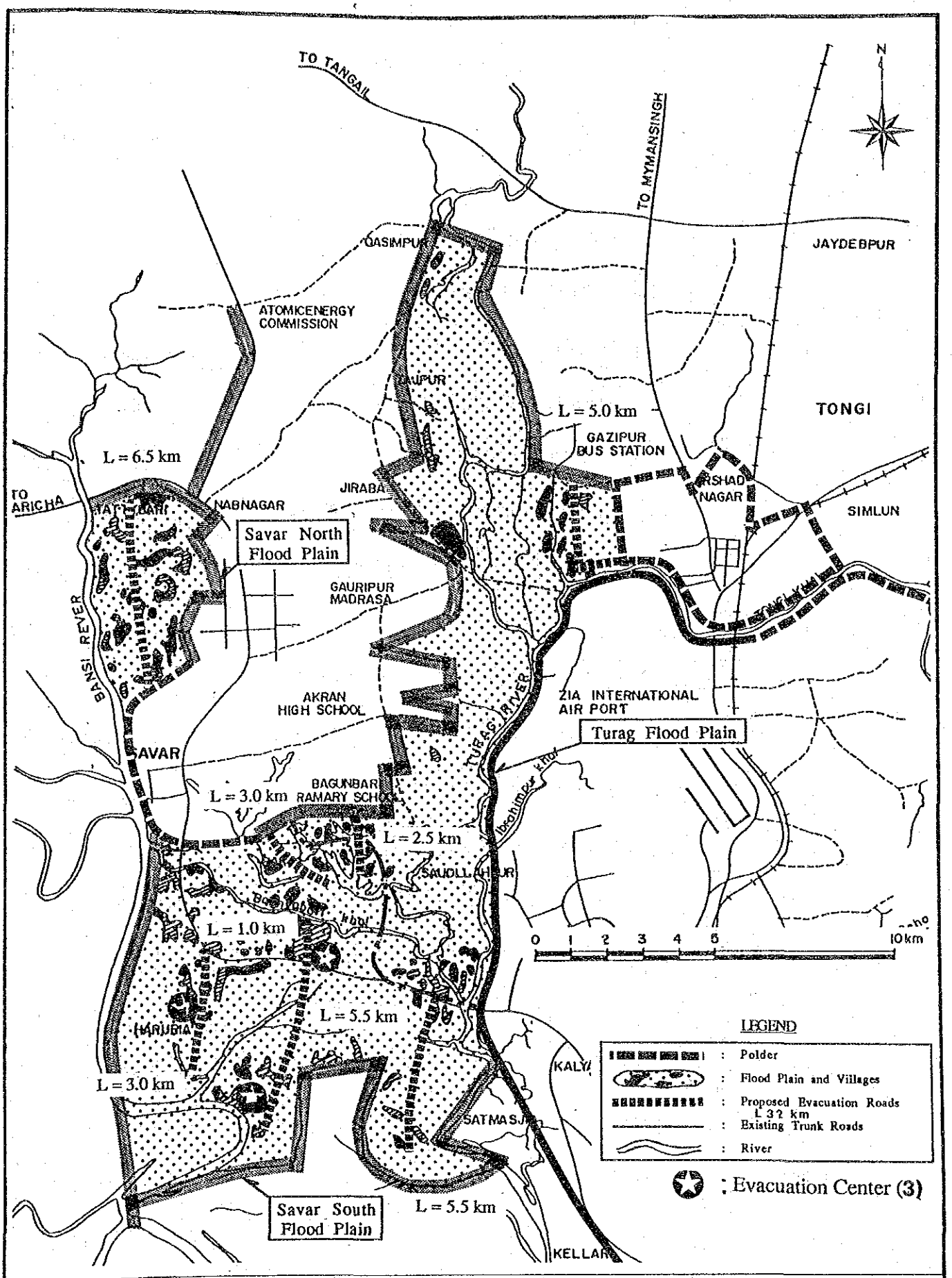
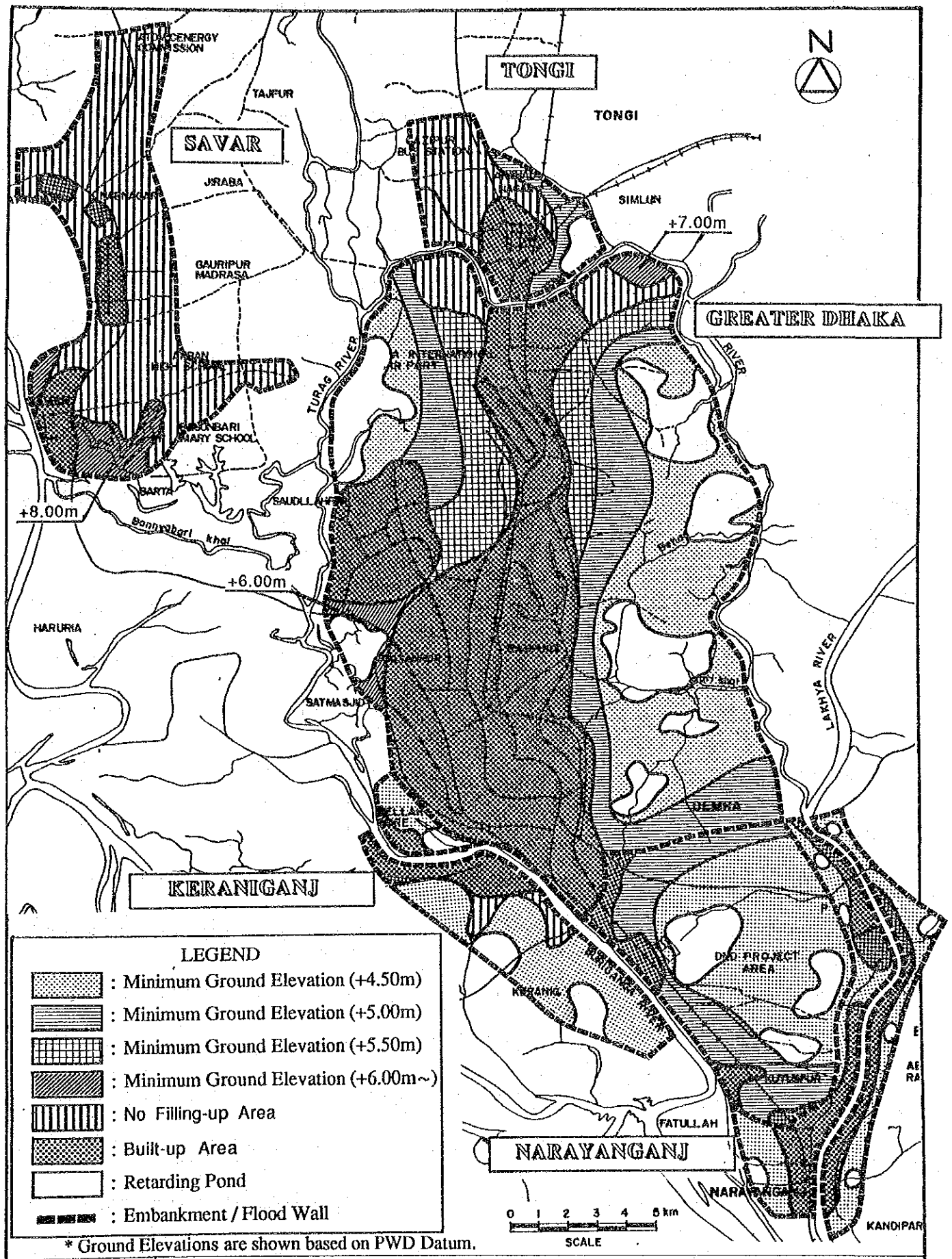


図 S.12(2) 洪水避難道路網と避難場所

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH

JICA



* Ground Elevations are shown based on PWD Datum.

図 S.13　将来の低地区開発のガイドライン（最低盛土高）

GREATER DHAKA PROTECTION PROJECT (STUDY IN DHAKA METROPOLITAN AREA) OF BANGLADESH FLOOD ACTION PLAN NO.8A IN THE PEOPLE'S REPUBLIC OF BANGLADESH