APPENDIX-11:
FINANCIAL EVALUATION

A11.1 Target Facilities of the Financial Evaluation

Target facilities for financial evaluation include NHA's facilities, public facilities, and infrastructure as listed below.

- Urban utilities which are necessary for the redevelopment, such as road, park, and infrastructures.
- Public facilities including local rejuvenation center and a school.

On the other hand, the following facilities are excluded from the target facilities.

- New BMA City Hall which does not generate revenue.
- Large commercial facilities, as those buildings are developed by the private sector.

The financial evaluation adopts the same conditions for construction cost with the cost estimation. The outline of each Block is presented in following table.

Outline of Target Facilities for the Financial Evaluation

- Construction Plan : [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]

Constructing Plan	Phase 1		Phase 2				Phase 3			
	K.1.3 (B')		A.1.1		C.1.5		A.1.2		D.1.6	
Land Area										
Building site	8.418	M2	14.584	M2	23.524	M2	11.129	M2	38.720	M2
Public Facility Area	0	M2	0	M2	0	M2	0	M2	0	M2
Total	8.418	M2	14.584	M2	23.524	M2	11.129	M2	38.720	M2
Floor Area	M2	Units	M2	Units	M2	Units	M2	Units	M2	Units
- Housing A (Non-redevelopment)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
- Housing B (6-20 storeys)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
- Housing C1(6-20 storeys)	18.145	(304)	43.062	(651)	76.705	(1.228)	33.600	(740)	124.260	(1.488)
- Housing C2(over 20 storeys)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
- Public Service	5.865		8.691		14.003		0		0	
- Commercial	4.816		3.770		6.145		760		0	
- Others	0		0		0		0		0	
- Parking (cars)	8.601	(244)	12.370	(399)	13.910	(599)	0	(0)	39.120	(1.118)
Total	37.426		67.893		110.763		34.360		163.380	
Public Facility										
- Road	0	M2	11.820	M2	0	M2	5.190	M2	0	M2
- Inflastructure	0	M	1.120	M	0	M	960	M	0	M
- Bus-terminal & Square	0	M2	0	M2	0	M2	0	M2	0	M2
- Underpass	0	M	0	M	0	M	0	M	0	M

Constructing Plan	Phase 4						Non-redevelopment			
	B.1.4		I.2.9		BMA Facilities		E		F.1.10	
Land Area										
Building site	71.200	M2	18.810	M2	0	M2	21.139	M2	31.571	M2
Public Facility Area	0	M2	0	M2	0	M2	0	M2	0	M2
Total	71.200	M2	18.810	M2	0	M2	21.139	M2	31.571	M2
Floor Area	M2	Units	M2	Units	M2	Units	M2	Units	M2	Units
- Housing A (Non-redevelopment)	0	(0)	0	(0)	0	(0)	36.089	(640)	48.667	(972)
- Housing B (6-20 storeys)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
- Housing C1(6-20 storeys)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
- Housing C2(over 20 storeys)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
- Public Service	0		18.640		8.940		0		0	
- Commercial	0		0		0		0		0	
- Others	0		0		0		0		0	
- Parking (cars)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
Total	0		18.640		8.940		36.089		48.667	
Public Facility										
- Road	20.630	M2	9.950	M2	116.170	M2	0	M2	0	M2
- Inflastructure	1.050	M	600	M	5.370	M	0	M	0	M
- Bus-terminal & Square	0	M2	0	M2	33.500	M2	0	M2	0	M2
- Underpass	0	M	0	M	400	M	0	M	0	M

Outline of Target Facilities for the Financial Evaluation (continued)

Constructing Plan	Total					
	Redevelopment		Non-redevelopment		Total	
Land Area						
Building site	186.385	M2	52.710	M2	239.095	M2
Public Facility Area	0	M2	0	M2	0	M2
Total	186.385	M2	52.710	M2	239.095	M2
Floor Area	M2	Units	M2	Units	M2	Units
- Housing A (Non-redevelopment)	0	(0)	84.756	(1.612)	84.756	(1.612)
- Housing B (6-20 stories)	0	(0)	0	(0)	0	(0)
- Housing C1(6-20 stories)	295.772	(4.411)	0	(0)	295.772	(4.411)
- Housing C2(over 20 stories)	0	(0)	0	(0)	0	(0)
- Public Service	56.138	(0)	0	(0)	56.138	(0)
- Commercial	15.490	(0)	0	(0)	15.490	(0)
- Others	0	(0)	0	(0)	0	(0)
- Parking (cars)	74.001	(2.360)	0	(0)	74.001	(2.360)
Total	441.401		84.756		526.157	
Public Facility						
- Road	163.760	M2	0	M2	163.760	M2
- Infrastructure	9.100	M	0	M	9.100	M
- Bus-terminal & Square	33.500	M2	0	M2	33.500	M2
- Underpass	400	M	0	M	400	M

A11.2 Conditions of Cost Estimation

(1) Unit Costs

Unit costs for various construction-related items have been assumed upon conditions listed below. The unit costs are presented in the following table.

- Survey and design cost refers to other projects by NHA.
- Cost for demolition of buildings and site preparation refers to other projects by NHA.
- Cost for complex buildings of residential, parking, commercial, and public facilities around 20 floors is 12,000Baht/m^2 according to estimation by the Case Study.
- Cost for the new BMA City Hall more than 20 floors is 20,000Baht/m^2.
- Cost for residential and hotel facilities developed by private sector is 18,000Baht/m^2, according to other projects by private sector.

- Cost for commercial facilities developed by private sector is 12,000Baht/m^2, according to other projects by private sector.
- Cost for commercial facilities and parking of BMA is 7,000Baht/m^2.
- Cost for landscaping follows estimation by the Case Study.
- Cost for infrastructure in sites is 7% of building construction cost, according to other projects by NHA.
- Management cost is 7% and contingency is 10% of construction cost.

Unit Cost

Items	Unit Cost
Survey and Design	
Survey Cost	600baht/rai
Design Cost	1.75% of Building Construction Cost
Demolition	900baht/m^2
Building Construction	
NHA's Facilities	12,000baht/m^2
New BMA City Hall	20,000baht/m^2
Public Facilities (Rejuvenation Center, and Other Public Facilities)	12,000baht/m^2
Parking Lot of NHA Housing Facilities	12,000baht/m^2
Commercial Facilities	
Service Apartment and Hotel	12,000baht/m^2
Parking Lot of BMA and Private Facilities	7,000baht/m^2
Landscaping	1,520baht/m^2
Infrastructure in Sites	7.0% of Building Construction Cost
Infrastructure/Utilities and Public Facilities	
Road	1,200baht/m^2
Infrastructure and Utilities	9,500baht/m
Water Supply Sewerage Electricity Telecommunication	Piping 5,000baht/m Piping 2,000baht/m Cable line 2,000baht/m Cable line 500baht/m
Bus Terminal including Square Square	4,000baht/m^2 1,200baht/m^2
Underpass crossing Viphradee Rangsit Road	450,000baht/m
Management	
Direct Cost	3.5% of Building Construction Cost
Indirect Cost	3.5% of Building Construction Cost
Contingency	10.0% of Building Construction Cost

(2) Compensation for BMA Facilities

Wichit school in Zone H will be relocated to develop the bus terminal and square. This school has to be re-located to another place.

Cost estimation includes relocation cost for office buildings in Block K1.3. Land for a new building is provided by land exchange between NHA and BMA. Scale of the new office buildings will be similar to the existing. Existing total floor area is 10,697m^2, consisting of 8,940m^2 for the school and 1,757m^2 for the office.

- Demolition Cost: Gross floor area*900 Baht/m^2
- Construction Cost: Gross floor area*11,000 Baht/m^2
- Total Unit Cost: Gross floor area*11,900 Baht/m^2

(3) Compensation

Compensation for moving-out household is set at 250,000Baht/household and for returning household 10,000Baht/house hold as moving cost.

Compensation Fee

Classification	Compensation	
Moving-out Household	Moving cost and Property Loss	10,000Baht
	Compensation for Moving-out	250,000Baht
	Total	260,000Baht
Returning Household	Moving cost and Property Loss	10,000Baht

(4) Inflation

Applying to the construction cost, annual inflation rate is set at 4.5%.

A11.3 Implementation Cost except Commercial Facilities

Total implementation cost for facilities except the commercial development by private sector has been estimated 9,828 million Baht. The total amount consists of 926 million Baht for the first phase, 3,289 for the second, 4,016 for the third, and 1,597 for the forth, as tabulated in the following.

Implementation Cost except the Commercial Development

-Phasing Study *[After Adding Inflation (4.5%/year)]* **No.1**

PHASE 1 [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]

Item of construction cost	Present Price	Phase1 : Annual Initial Expenses										
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	Total
Inflation Rate		1,05	1,09	1,14	1,19	1,25	1,30	1,36	1,42	1,49	1,55	
Survey, Design and Planning Cost	7,9	8,3										8,3
Clearance Cost	271,0	116,4	174,2									290,6
Construction Cost	508,1	212,3	332,9									545,2
Building Construction Cost	449,1	187,7	294,2									481,9
- Housing A	0,0											0,0
- Housing B	0,0											0,0
- Housing C1	217,7	91,0	142,6									233,6
- Housing C2	0,0											0,0
- Public Service	70,4	29,4	46,1									75,5
- Parking	103,2	43,1	67,6									110,7
- Commercial	57,8	24,2	37,9									62,1
- Others	0,0											
- Parking	0,0											0,0
Landscape Construction Cost	6,7	2,8	4,4									7,2
Infrastructure Construction Cost	31,4	13,1	20,6									33,7
Public Facilitiy Construction Cost	0,0											0,0
- Road	0,0											0,0
- Inflastructure	0,0											0,0
- Bus-terminal & Square	0,0											0,0
- Underpass	0,0											0,0
Relocation of School	20,9	8,7	13,7									22,4
Project Management Cost	76,3	31,9	50,0									81,9
Total	863,3	368,9	557,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	926,0

PHASE 2 [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]

Item of construction cost	Present Price	Phase2 : Annual Initial Expenses										
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	Total
Inflation Rate		1,05	1,09	1,14	1,19	1,25	1,30	1,36	1,42	1,49	1,55	
Survey, Design and Planning Cost	37,6			42,9								42,9
Clearance Cost	49,2			56,2								56,2
Construction Cost	2.357,2			1.076,0	1.686,5							2.762,5
Building Construction Cost	2.143,7			978,5	1.533,7							2.512,2
- Housing A	0,0											0,0
- Housing B	0,0											0,0
- Housing C1	1.437,2			656,1	1.028,3							1.684,4
- Housing C2	0,0											0,0
- Public Service	272,3			124,3	194,8							319,1
- Parking	315,3			143,9	225,6							369,5
- Commercial	118,9			54,2	85,0							139,2
- Others	0,0											
- Parking	0,0											0,0
Landscape Construction Cost	38,7			17,7	27,7							45,4
Infrastructure Construction Cost	150,0			68,5	107,3							175,8
Public Facilitiy Construction Cost	24,8			11,3	17,8							29,1
- Road	14,2			6,5	10,2							16,7
- Inflastructure	10,6			4,8	7,6							12,4
- Bus-terminal & Square	0,0											0,0
- Underpass	0,0											0,0
Relocation of School	0,0											0,0
Project Management Cost	364,4			166,3	260,7							427,0
Total	2.808,4	0,0	0,0	1.341,4	1.947,2	0,0	0,0	0,0	0,0	0,0	0,0	3.288,6

***The price is shown in millions**

Implementation Cost except the Commercial Development (continued)

- Initial Expenses by Year in Each Phase [After Adding Inflation] **No.2**

PHASE 3 [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]

Item of construction cost	Present Price	Phase3 : Annual Initial Expenses										
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	Total
Inflation Rate		1,05	1,09	1,14	1,19	1,25	1,30	1,36	1,42	1,49	1,55	
Survey, Design and Planning Cost	41,5					51,8						51,8
Clearance Cost	72,5					90,3						90,3
Construction Cost	2.623,3					1.307,7	2.049,7					3.357,4
Building Construction Cost	2.372,8					1.182,8	1.854,0					3.036,8
- Housing A	0,0											0,0
- Housing B	0,0											0,0
- Housing C1	1.894,3					944,3	1.480,1					2.424,4
- Housing C2	0,0											0,0
- Public Service	0,0											0,0
- Parking	469,4					234,0	366,8					600,8
- Commercial	9,1					4,5	7,1					11,6
- Others	0,0											
- Parking	0,0											0,0
Landscape Construction Cost	69,1					34,5	54,0					88,5
Infrastructure Construction Cost	166,1					82,8	129,8					212,6
Public Facilitiy Construction Cost	15,3					7,6	11,9					19,5
- Road	6,2					3,1	4,8					7,9
- Inflastructure	9,1					4,5	7,1					11,6
- Bus-terminal & Square	0,0											0,0
- Underpass	0,0											0,0
Relocation of School	0,0											0,0
Project Management Cost	403,3					201,0	315,1					516,1
Total	3.140,6	0,0	0,0	0,0	0,0	1.650,8	2.364,8	0,0	0,0	0,0	0,0	4.015,6

PHASE 4 [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]

Item of construction cost	Present Price	Phase4 : Annual Initial Expenses										
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	Total
Inflation Rate		1,05	1,09	1,14	1,19	1,25	1,30	1,36	1,42	1,49	1,55	
Survey, Design and Planning Cost	3,9							5,3				5,3
Clearance Cost	161,2							219,4				219,4
Construction Cost	944,1							513,9	805,7			1.319,6
Building Construction Cost	223,7							121,8	190,9			312,7
- Housing A	0,0											0,0
- Housing B	0,0											0,0
- Housing C1	0,0											0,0
- Housing C2	0,0											0,0
- Public Service	223,7							121,8	190,9			312,7
- Parking	0,0											0,0
- Commercial	0,0											0,0
- Others	0,0											0,0
- Parking	0,0											0,0
Landscape Construction Cost	25,3							13,7	21,6			35,3
Infrastructure Construction Cost	15,7							8,5	13,4			21,9
Public Facilitiy Construction Cost	573,0							312,0	489,0			801,0
- Road	176,1							95,9	150,3			246,2
- Inflastructure	66,7							36,3	56,9			93,2
- Bus-terminal & Square	150,2							81,8	128,2			210,0
- Underpass	180,0							98,0	153,6			251,6
Relocation of School	106,4							57,9	90,8			148,7
Project Management Cost	38,0							20,7	32,4			53,1
Total	1.147,2	0,0	0,0	0,0	0,0	0,0	0,0	759,3	838,1	0,0	0,0	1.597,4

***The price is shown in millions**

Implementation Cost except the Commercial Development (continued)

- Total of Initial Expenses by Year [After Adding Inflation] No.3

Grand Total [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]

Item of construction cost	Present Price	Grand Total : Annual Initial Expenses											
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	Total	
Inflation Rate		1,05	1,09	1,14	1,19	1,25	1,30	1,36	1,42	1,49	1,55		
Survey, Design and Planning Cost	91,0	8,3		42,9		51,8		5,3				108,3	1%
Land Clearance Cost	553,9	116,4	174,2	56,2		90,3		219,4				656,5	7%
Construction Cost	6.432,7	212,3	332,9	1.076,0	1.686,5	1.307,7	2.049,7	513,9	805,7			7.984,7	81%
Building Construction Cost	5.189,3	187,7	294,2	978,5	1.533,7	1.182,8	1.854,0	121,8	190,9			6.343,6	65%
- Housing A	0,0											0,0	0%
- Housing B	0,0											0,0	0%
- Housing C1	3.549,2	91,0	142,6	656,1	1.028,3	944,3	1.480,1					4.342,4	44%
- Housing C2	0,0											0,0	0%
- Public Service	566,4	29,4	46,1	124,3	194,8			121,8	190,9			707,3	7%
- Parking	887,9	43,1	67,6	143,9	225,6	234,0	366,8					1.081,0	11%
- Commercial	185,8	24,2	37,9	54,2	85,0	4,5	7,1					212,9	2%
- Others	0,0											0,0	0%
- Parking	0,0											0,0	0%
Landscape Construction Cost	139,8	2,8	4,4	17,7	27,7	34,5	54,0	13,7	21,6			176,4	2%
Infrastructure Construction Cost	363,2	13,1	20,6	68,5	107,3	82,8	129,8	8,5	13,4			444,0	5%
Public Facilitiy Construction Cost	613,1			11,3	17,8	7,6	11,9	312,0	489,0			849,6	9%
- Road	196,5			6,5	10,2	3,1	4,8	95,9	150,3			270,8	3%
- Inflastructure	86,4			4,8	7,6	4,5	7,1	36,3	56,9			117,2	1%
- Bus-terminal & Square	150,2							81,8	128,2			210,0	2%
- Underpass	180,0							98,0	153,6			251,6	3%
Relocation of School	127,3	8,7	13,7					57,9	90,8			171,1	2%
Project Management Cost	882,0	31,9	50,0	166,3	260,7	201,0	315,1	20,7	32,4			1.078,1	11%
Total	7.959,6	368,9	557,1	1.341,4	1.947,2	1.650,8	2.364,8	759,3	838,1	0,0	0,0	9.827,6	100%

***The price is shown in millions**

A11.4 Preliminary Evaluation for the Commercial Development

The Study has preliminarily examined financial analysis to find the floor rents of the commercial facilities in Block B 1.4, which has the area of 71,200m^2 developed by private sector. As a result, the floor rent is set at 800 Baht/m^2/month upon the following conditions.

- The private sector provides funds and distribute dividend to the land trustee after reduction of management cost and repayment to the loan fund.
- Revenue from the investor is only floor rent with occupancy rate of 95%, excluding parking and key money.
- Floor rent is raised by 15% every 3 years.
- Management cost is assumed 20% of revenue.
- Inflation rate is 4.5% annually.
- No imposition of taxes for fixed property and profit.
- It is the first year in which the private sector invests construction cost.

In addition to the analysis discussed above, average floor rent in popular shopping centers in Bangkok is around 1,200 Baht/m^2/month, and that of the serviced apartment/hotel 880 Baht/m^2/month. Taking a risk factor 30% into consideration, average floor rent will come to be about 800 Baht/m^2/month. This can be translated into an annual revenue 1,368 Baht/m^2.

In case of Japan, capable rent fee of retailers is said to be around 10% of sales amount. Therefore required annual sales amount is assumed 13,680 million Baht which is within the commercial demand forecast of 15,600 million Baht in the Study Area.

Assumption of Floor Rents in the Commercial Development

Initial Investment						
Land Area		71,200	m^2			
Assumed land price in 2007		71,110	Baht /m^2 (5,063 Million Baht in total)			
Building	Commerce	200,000	m^2	16,771Baht/m^2	3,354	Million Baht
	Apartment & Hotel	50,000	m^2	25,156Baht/m^2	1258	Million Baht
	Parking	104,167	m^2	9,783Baht/m^2	1,019	Million Baht
	Total	354,167	m^2	15,900Baht/m^2	5,631	Million Baht
Revenue						
Building	Rental floor area	150,000	m^2		42	% (Net rate)
	Occupancy floor area	142,500	m^2		5.0	% (Vacancy rate)
	Key money		Baht / m^2			Million Baht
	Floor rent	800	Baht / m^2 / month		1,368	million Baht / year
Expenditure						
Building	Management cost	20.0 % * Rent			270	million Baht / year
Tax	No imposion					Million Baht / year

Cash Flow of the Commercial Development

< The Long-term Revenue and Expenditure >

	Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	40	50
(Income Inflation)	15% every 3 year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.75)	(2.31)	(2.66)	(3.52)	(5.35)	(9.36)
(Expense Inflation	4.5% every year	(1.00)	(1.05)	(1.09)	(1.14)	(1.19)	(1.25)	(1.30)	(1.36)	(1.42)	(1.49)	(1.85)	(2.31)	(2.88)	(3.58)	(5.57)	(8.64)
- Building	Building Cost	5,631															
	Management Cost		282	295	308	322	336	352	367	384	401	500	623	777	968	1,503	2,334
- Loan	Interest 5.0%	0	366	366	366	366	366	366	366	366	366	366	366	366	366	0	
Expense Total		5,631	648	661	674	688	703	718	734	750	768	866	989	1,143	1,334	1,503	2,334
- Building	Key Money		0														
	Rental Fee		1,368	1,368	1,368	1,573	1,573	1,573	1,809	1,809	1,809	2,393	3,164	3,639	4,812	7,319	12,801
Income Total			1,368	1,368	1,368	1,573	1,573	1,573	1,809	1,809	1,809	2,393	3,164	3,639	4,812	7,319	12,801
Cash Flow by each year		-5,631	720	707	694	885	870	855	1,075	1,059	1,042	1,526	2,175	2,496	3,478	5,816	10,467
Accumulated Cash Flow		-5,631	-4,912	-4,205	-3,511	-2,626	-1,756	-901	175	1,234	2,275	9,177	18,298	30,150	46,058	95,732	176,919

*The price is shown in millions

Further FIRR of the commercial development is estimated 18% for the 30 years

project period.

FIRR of the Commercial Development

Duration (years)	10	15	20	30	40	50
FIRR (%)	7	14	16	18	18	18

A11.5 Revenue and Expenditure

(1) Revenue

1) General

Floors generating revenue are residential units, car park annexed to residences, and commercial floors, though the common space in the residential building, space for local public services and car park belonging to the commercial spaces are categorized as appurtenant facilities, and not as revenue generating spaces.

2) NHA's Facilities

The rent of NHA's facilities has been set as shown in the following table. Occupancy rate is adopted 95%.

Rents of NHA's Facilities

Facility	Rent
Housing Unit for Ordinary Income Returning Household	1,500 Baht/unit/month with increasing ratio 15% per 3 years
Housing Unit for New Household	5,600 Baht/unit/month with increasing ratio 15% per 3 years
Parking	1,500 Baht/month with increasing ratio 15% per 3 years
Commercial	550 Baht/m^2/month with increasing ratio 15% per 3 years

Note: Housing rents of 600 Baht/unit/month from the low income returning household is excluded from the revenue of the financial evaluation, as those households are planned to relocate in the existing housing units.

Market rate of commercial floor rent in the surrounding area will be applied. In reality though, floor rents differ from place to place because of the difference in profitability. Average 550 Baht/m^2/month has been taken here.

Current Commercial Rent Phahon Yothin Road and Rachadaphisek Road

	Central Plaza		Patara Complex		Pahonyotin Plaza		Sun Tower		Rasa		Elephant Building	
	office	Plaza	office	Plaza	office	Plaza	office	Plaza	office	Plaza	office	Plaza
Location	Pahonyotin Road		Near Rachadapisake Road		Pahonyotin Road		Vipawadee Road		Pahonyotin Road		Pahonyotin Road	
	Ladprao Junction		Suthisarn Junction		Near Soi Area		Near Ladprao Junction		Near Central Department		Near Rotjayotin Junction	
Stories	14F	4F	35F	3F	42F	3F	48F	1F	27F	1F	28F	3F
	1 tower	Under tower	2 towers	Under tower	2 Towers	Under tower	2 towers	Under tower	1 tower	Under tower	2 towers	Under tower
Rental Floor size	100 m2 or more	8 m2 or more	100 m2 or more	30 m2 or more	100 m2 or more	30 m2 or more	100 m2 or more	8 m2 or more	150 m2 or more	38 m2 or more	200-500 m2	38 m2 or more
Vacant rate	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.	
Rental Condition												
Permition of rental period	3 Years		2-3 years		3 Years		2-3 years		3 years		2 years	
Deposit	3-6 months		3 months		3 months		3 months		3 months		3 months	
Charge of common area	55Baht/m2/month		45Baht/m2/month		40Baht/m2/month		40Baht/m2/month				20Baht/m2/month	
Charge of air condition	Over time 1.5 Baht/hour/m2	Central air	8,000 Baht/year Separating type	Central air	Over time 350 Baht/hour	Central Air condition	Central Air condition		Central Air condition		Separating Air Condition	
Water Charge	MWA Rate				1.760 Baht /unit		Meter charge		Meter charge		Included in rental rate	
Electric charge	MEA Rate		MEA Rate		MEA Rate		Meter charge		Meter charge		Meter charge	
Telephone charge	6658 Baht /line		20,000 Baht/line		20,000 Baht/line		15,000 Baht/line		1 / line / unit		20,000 Baht/line	
Surroundings												
Front Road	Main road		Main road		Main road		Main road		Main Road		Main road	
Character	Single business building		Office automation		Near military area		Near business center		Single business building		Office automation,	
Facilities	Shopping center, Entertainment		Fitness Center		Fitness Center						Sport complex, Restaurant	
Maintenance	Medium	Good	Good		Good		Good		Good		Medium	
Fire Protection System	Hood Reel		Standard		Standard		Standard		Standard		Standard	
Car Parking	1 bay / 100m2	1 bay / tunit	1 bay / unit		2 bays/ unit		1 bay / unit		1 bay / unit		1bay / unit	
Rental Rate; Baht/m2/month	380	1500-1800	350-400	350-400	300-320	500-800	350-400	250-500	400-	400-450	280-	150-200
Adjust Rate	380	1.600	350	350	250	500	320	500	380	400	250	150

(2) Expenditure

1) Repayment of Loan Money

In case of the financial evaluation, entire fund for construction is loaned from a bank(s) at an interest rate of 7.0% per annum. According to the interview by the Study, private banks normally loan to the government offices at 5.0 –7.0% interest per annum without grace period is excluded.

2) Land Lease Fee of NHA's Land

According to the Ratchapatsadu Land for State Enterprise as of July 1, 1999, land lease fee of NHA's lands is set at 28 Baht/wah/month, excluding fees for Block B 1.4, which is used by MOF.

3) Management Expense

20% of house rent revenue is allocated to management expense for NHA.

4) Taxes

There will be no tax imposed on the Project in association with purchase of or transfer of fixed property or on the profit, since the buildings are constructed and

operated either by NHA or BMA itself.

(3) Inflation

Inflation rate was assumed to be 4.5% per annum. It is noted that hiking rate of house rent revenue was set at 15% in every 3 years which is nearly equal to the inflation rate.

(4) Conditions for the Cash Flow Analysis

Reflecting the various setting of conditions for the financial analysis discussed in the previous sections, those settings are summarized in the following table.

Conditions of the Cash Flow Analysis

Revenue	
Revenue from Private Sector	Dividend from land trust to private sector. Floor rent: 800Baht/m^2/month, excluding management fee (Rentable floor: 150,000m^2 with vacancy rate of 5%) Management cost: 20% Conditions of loan for private sector: inflation rate - 5%, repayment period - 30 years Hike of floor rent: 15% in every 3years Increasing of inflation rate: 4.5%
Revenue from NHA's Facilities	
- Returning Lowest Income Resident	600 Baht/house/month. (Not counted in cash flow)
- Ordinary Income Returning Resident	1,500 Baht/unit/month
- New resident	140 Baht/m2/month
- Car park	1,500 Baht/car/month
- Commercial facility	550 Baht/m2/month(rentable floor)
- Vacancy rate	5%
Expenditure	
Inflation Ratio	Annual 4.5%
Repayment of Loaned Money	
- Fund	Whole fund loaned with repayment period of 30 years
- Interest	Annual 7%
Administration Expense	
- Management expense	20% of house rent revenue including clerical and facility admin. cost.
- Land rent payable to government	28 Baht/wah/month
Tax	
- Fixed property transfer tax, stamp duty	Not applicable
- Local tax(income from fixed property)	Not counted in cash flow.

Note: Figure in () is required period for repayment.

A11.6 Analysis

(1) Base Case

In regard to implementation cost of 9,828 million Baht with inflation, covering the public facilities, FIRR is estimated 6.6% in a 30 years period, 8.9% in a 40 years, and 9.8% in a 50 years.

Financial balance for a fiscal year turns to the surplus in the 9th year when the project investment is completed, and for cumulative turns in the 21st year.

(2) Case 1: Rents for returning residents, new residents, parking, and commercial floor is raised by 15% in every 10 years.

Comparing with the revenue from the NHA housing units, the floor rents of the commercial development is large. Consequently FIRR and financial balance is similar to the Base Case. On the other hand, the hike of housing rents is fundamental to autonomously maintain the housing facilities, especially rents for the ordinary income returning households set at one-third of the market price.

- Required period to turn the financial balance in a year to the surplus: 9 years
- Required period to turn the cumulative financial balance to the surplus: 21 years
- FIRR: 5.7% in a 30 years period, 8.2% in a 40 years, 9.2% in a 50 years

(3) Case 2: Fund is provided by External Resources without any Own Fund

Reflecting the revenue of the commercial development, the financial balance in a year turns to the surplus in the 9th year.

- Required period to turn the financial balance in a year to the surplus: 9 years
- Required period to turn the cumulative financial balance to the surplus: 23 years
- FIRR: 4.9% in a 30 years period, 7.7% in a 40 years, 8.9% in a 50 years

(4) Case 3: Decreasing of Revenue from the Commercial Development

As presented in the previous two cases, the revenue from the commercial development is main driving force for the redevelopment. Provided that the required period to turn the financial balance in a year is 9 years and the cumulative is 30 years, the maximum possible reduction of the revenue from the

commercial development has been estimated 30%. Assumed factors to reduce the floor rent are decreasing of the floor rent and increasing of management cost. Upon those circumstances, FIRR has been estimated as below.

- FIRR: 1.5% in a 30 years period, 5.3% in a 40 years, 6.9% in a 50 years

(5) Case 4: Increasing of Inflation

When the inflation rate of loan funds for governmental and private bodies increases from 5% to 10%, financial situation is strongly affected as the required period for the surplus in a year is 11 years and FIRR for a 30 years period is 2.0%.

- Required period to turn the financial balance in a year to the surplus: 11 years
- Required period to turn the cumulative financial balance to the surplus: 28 years
- FIRR: 2.0% in a 30 years period, 6.0% in a 40 years, 7.6% in a 50 years

(6) Case 5: Increasing of Moving-out Residents

Increasing of moving-out residents from 15% to 50% does not affect the financial situation, because the house rents from new residents increase revenue, while the rising of compensation fee.

- Required period to turn the financial balance in a year to the surplus: 9 years
- Required period to turn the cumulative financial balance to the surplus: 21 years
- FIRR: 6.3% in a 30 years period, 8.6% in a 40 years, 9.6% in a 50 years

(7) Case 6: Adopting all modified conditions in the previous five cases.

Applying all the modified conditions in the previous five cases, the required period for the surplus in a year is 23 years and the cumulative is 40 years.

(8) Conclusion

Sensitivity analysis of the six cases is presented in the following table and details of the cash flows of each case is attached in the end of this section.

Sensitivity Analysis of the Base Case and Alternative Five Cases

Case	Condition					Required Years for the Surplus in a Year (Year)	Required Years for the Surplus in the Cumulative (Year)	FIRR		
	Hike of House Rents	Provision of Own Fund	Revenue from Commerce Develop.	Inflation Rate	Moving-out Ratio			Project Life 30 Years	Project Life 40 Years	Project Life 50 Years
Base Case	15%/3year	30%	800	5.0%	15%	9	21	6.6%	8.9%	9.8%
Case 1	15%/10year	30%	800	5.0%	15%	9	21	5.7%	8.2%	9.2%
Case 2	15%/3year	0%	800	5.0%	15%	9	23	4.9%	7.7%	8.9%
Case 3	15%/3year	30%	-30%	5.0%	15%	9	28	1.5%	5.3%	6.9%
Case 4	15%/3year	30%	800	10.0%	15%	11	27	2.2%	6.1%	7.7%
Case 5	15%/3year	30%	800	5.0%	50%	9	21	6.3%	8.6%	9.6%
Case 6	15%/10year	0%	-30%	10.0%	15%	23	40	-11.9%	0.1%	3.4%

Note: Unit for the "revenue from commercial develop." is Baht/m^2/month.

Reflecting that the house rents for the ordinary income returning households is set at 1,500 Baht/m^2/month which is around one-forth, the NHA housing project does not secure the financial balance.

On the other hand, the commercial balance maintains the profit of the redevelopment, by distributing the dividend to the non-profitable projects, such as the housings and public facilities. Deducting the revenue from the commercial development by 30%, the required period for the surplus in a years is still 9 years which is the next year of the completion of investment.

Cash Flow Analysis of Base Case

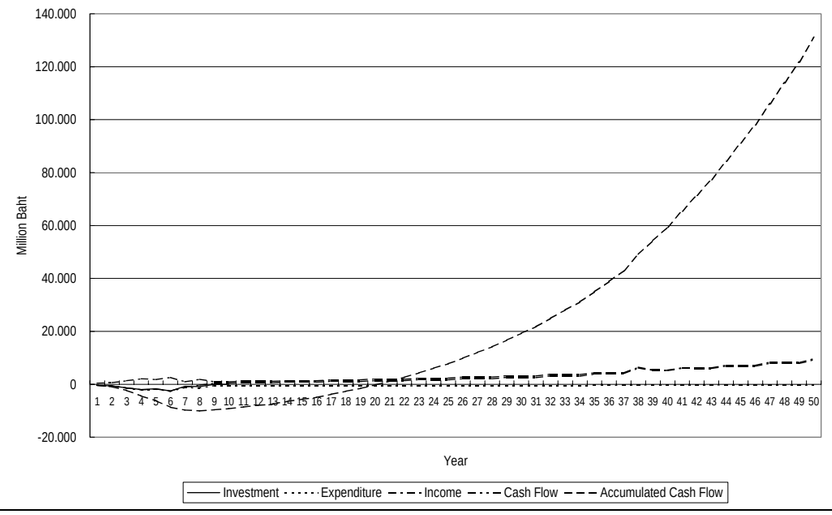
- Cash Flow of 50 years **Base Case [NHA's facilities and Infrastructures, plus Profit from Private Sector(REIT)]**

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564
Rental Income		3	3	36	36	135	135	213	964	952	939	1,166	1,152	1,137	1,399	1,382	1,365	1,667	1,648	1,628	1,975
Private Commercial Floor									720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- Profit from REIT								0	720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548
NHA's Facilities		3	3	36	36	135	135	213	245	245	245	282	282	282	324	324	324	372	372	372	427
- Housing A	0 bt/unit/month																				
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	1,500 bt/unit/month			5	5	43	43	84	96	96	96	111	111	111	127	127	127	147	147	147	169
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)
- C1 for New Comer	140 bt/sq.m/month							13	15	15	15	17	17	17	20	20	20	23	23	23	26
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)
- Parking	1,500 bt/car/month			4	4	24	24	46	53	53	53	61	61	61	71	71	71	81	81	81	93
	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)
Housing, Sub Total		3	3	12	12	71	71	147	168	168	168	193	193	193	222	222	222	256	256	256	294
- Commercial	550 bt/sq.m/month			24	24	64	64	67	77	77	77	88	88	88	101	101	101	117	117	117	134
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)
Loan from Financial Agency		265	413	963	1,445	1,185	1,756	545	629												
Own Fund		111	167	402	584	495	709	228	251												
Investment from Govt.																					
Total Revenue by each year		378	583	1,401	2,066	1,814	2,600	986	1,844	952	939	1,166	1,152	1,137	1,399	1,382	1,365	1,667	1,648	1,628	1,975
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41
Constructing Expense		369	557	1,341	1,947	1,651	2,365	759	838	0	0										
Interest during Construction		7	23	24	82	29	101	13	42	0	0										
Payment for Loan from Financial Agency				44	44	201	201	392	392	468	468	468	468	468	468	468	468	468	468	468	468
Repayment for Principal	Debt F 0.70			10	11	47	50	97	101	124	130	137	144	151	158	166	175	183	193	202	212
- Public Agency				10	11	47	50	97	101	124	130	137	144	151	158	166	175	183	193	202	212
- Private Agency																					
Payment for Interest (a)				34	33	153	151	295	291	344	338	331	325	317	310	302	294	285	276	266	256
- Public Agency	5.00% per year			34	33	153	151	295	291	344	338	331	325	317	310	302	294	285	276	266	256
- Private Agency																					
Management		1	1	13	13	33	33	49	56	56	57	64	65	65	74	74	74	85	85	86	97
Managing cost	20% of Rental Fee	1	1	7	7	27	27	43	49	49	49	56	56	56	65	65	65	74	74	74	86
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.2	10.7	11.2	11.7
Tax																					
- Transfer Fee																					
- Local Improvement Tax : under calculation																					
Total Expenditure		376	581	1,422	2,086	1,913	2,699	1,214	1,328	525	525	532	533	533	542	542	543	553	553	554	565
Investment		-375	-580	-1,365	-2,029	-1,680	-2,465	-773	-880												
Expenditure		-376	-581	-1,422	-2,086	-1,913	-2,699	-1,214	-1,328	-525	-525	-532	-533	-533	-542	-542	-543	-553	-553	-554	-565
Income		378	583	1,401	2,066	1,814	2,600	986	1,844	952	939	1,166	1,152	1,137	1,399	1,382	1,365	1,667	1,648	1,628	1,975
Cash Flow		-373	-578	-1,386	-2,050	-1,779	-2,565	-1,001	-363	427	414	634	619	604	857	840	822	1,114	1,095	1,074	1,410
Accumulated Cash Flow		-373	-951	-2,336	-4,387	-6,165	-8,730	-9,731	-10,094	-9,667	-9,253	-8,619	-8,000	-7,396	-6,539	-5,699	-4,877	-3,763	-2,668	-1,594	-184

Facility	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584
Rental Income	1,954	1,931	2,331	2,306	2,280	2,740	2,712	2,683	3,211	3,179	3,146	3,754	3,718	3,679	4,379	4,337	4,294	5,465	5,418	5,368
Private Commercial Floor	1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380
- Rental rate	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- Profit from REIT	1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380
NHA's Facilities	427	427	491	491	491	565	565	565	650	650	650	747	747	747	859	859	859	988	988	988
- Housing A																				
Inflation rate	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	169	169	194	194	194	223	223	223	256	256	256	295	295	295	339	339	339	390	390	390
Inflation rate	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)
- C1 for New Comer	26	26	30	30	30	35	35	35	40	40	40	46	46	46	53	53	53	60	60	60
Inflation rate	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)
- Parking	93	93	107	107	107	123	123	123	142	142	142	163	163	163	188	188	188	216	216	216
	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)
Housing, Sub Total	294	294	337	337	337	388	388	388	446	446	446	513	513	513	590	590	590	678	678	678
- Commercial	134	134	154	154	154	177	177	177	204	204	204	234	234	234	269	269	269	310	310	310
Inflation rate	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)
Loan from Financial Agency																				
Own Fund																				
Investment from Govt.																				
Total Revenue by each year	1,954	1,931	2,331	2,306	2,280	2,740	2,712	2,683	3,211	3,179	3,146	3,754	3,718	3,679	4,379	4,337	4,294	5,465	5,418	5,368
Inflation of Expenditure	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82
Constructing Expense																				
Interest during Construction																				
Payment for Loan from Financial Agency	468	468	468	468	468	468	468	468	468	468	468	468	424	424	268	268	76	76		
Repayment for Principal	223	234	246	258	271	285	299	314	329	346	363	381	356	374	236	248	69	73		
- Public Agency	223	234	246	258	271	285	299	314	329	346	363	381	356	374	236	248	69	73		
- Private Agency																				
Payment for Interest (a)	245	234	222	210	197	184	169	155	139	122	105	87	68	50	31	20	7	4		
- Public Agency	245	234	222	210	197	184	169	155	139	122	105	87	68	50	31	20	7	4		
- Private Agency																				
Management	98	98	112	112	113	128	129	130	147	148	149	169	170	171	194	195	196	223	224	226
Managing cost	86	86	98	98	98	113	113	113	130	130	130	149	149	149	172	172	172	198	198	198
Land Rent	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1	18.9	19.8	20.7	21.6	22.6	23.6	24.7	25.8	26.9	28.1
Tax																				
- Transfer Fee																				
- Local Improvement Tax : under calculation																				
Total Expenditure	566	567	580	581	581	597	597	598	616	616	617	638	594	595	462	463	273	300	224	226
Investment																				
Expenditure	-566	-567	-580	-581	-581	-597	-597	-598	-616	-616	-617	-638	-594	-595	-462	-463	-273	-300	-224	-226
Income	1,954	1,931	2,331	2,306	2,280	2,740	2,712	2,683	3,211	3,179	3,146	3,754	3,718	3,679	4,379	4,337	4,294	6,448	5,418	5,368
Cash Flow	1,388	1,365	1,751	1,725	1,699	2,143	2,115	2,085	2,596	2,563	2,529	3,117	3,123	3,084	3,917	3,874	4,021	6,148	5,193	5,142
Accumulated Cash Flow	1,204	2,569	4,319	6,045	7,744	9,887	12,002	14,086	16,682	19,245	21,774	24,890	28,013	31,098	35,015	38,889	42,910	49,058	54,252	59,394

Facility	41	42	43	44	45	46	47	48	49	50	50years
	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Rental Income	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	161,539
Private Commercial Floor	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
- Rental rate	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- Profit from REIT	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
NHA's Facilities	1,136	1,136	1,136	1,306	1,306	1,306	1,502	1,502	1,502	1,727	31,964
- Housing A											
Inflation rate	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	448	448	448	516	516	516	593	593	593	682	12,571
Inflation rate	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- C1 for New Comer	70	70	70	80	80	80	92	92	92	106	1,933
Inflation rate	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- Parking	248	248	248	286	286	286	328	328	328	378	6,966
	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Housing, Sub Total	779	779	779	896	896	896	1,030	1,030	1,030	1,185	21,875
- Commercial	356	356	356	410	410	410	471	471	471	542	10,089
Inflation rate	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Loan from Financial Agency											7,199
Own Fund											
Investment from Govt.											
Total Revenue by each year	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	171,687
Inflation of Expenditure	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Constructing Expense											9,828
Interest during Construction											
Payment for Loan from Financial Agency											14,050
Repayment for Principal											7,199
- Public Agency											7,199
- Private Agency											
Payment for Interest (a)											6,850
- Public Agency											6,850
- Private Agency											
Management	257	258	259	295	296	298	339	340	342	389	7,285
Managing cost	227	227	227	261	261	261	300	300	300	345	6,393
Land Rent	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax											
- Transfer Fee											
- Local Improvement Tax : under calculation											
Total Expenditure	257	258	259	295	296	298	339	340	342	389	31,482
Investment											-10,148
Expenditure	-257	-258	-259	-295	-296	-298	-339	-340	-342	-389	-31,482
Income	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	172,669
Cash Flow	6,038	5,982	5,924	6,954	6,891	6,824	8,010	7,937	7,862	9,225	131,040
Accumulated Cash Flow	65,432	71,414	77,338	84,292	91,182	98,007	106,016	113,953	121,815	131,040	



Cash Flow Analysis of Case 1

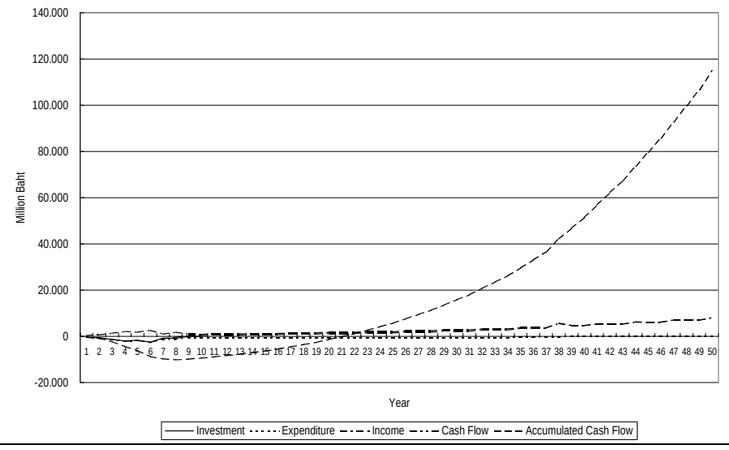
- Cash Flow of 50 years **Case 1 [Reducing rent hike rate, 15% every 10 year]**

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564
Inflation of Revenue		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41
Rental Income		3	3	36	36	117	117	185	905	892	879	1,098	1,084	1,068	1,289	1,272	1,255	1,508	1,489	1,470	1,761
Private Commercial Floor									720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)
- Profit from REIT								0	720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548
NHA's Facilities		3	3	36	36	117	117	185	185	185	185	213	213	213	213	213	213	213	213	213	213
- Housing A	0 bt/unit/month																				
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	1,500 bt/unit/month			5	5	37	37	73	73	73	73	84	84	84	84	84	84	84	84	84	84
Inflation rate	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
- C1 for New Comer	140 bt/sq.m/month							11	11	11	11	13	13	13	13	13	13	13	13	13	13
Inflation rate	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
- Parking	1,500 bt/car/month			4	4	21	21	40	40	40	40	46	46	46	46	46	46	46	46	46	46
	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
Housing, Sub Total		3	3	12	12	62	62	128	128	128	128	147	147	147	147	147	147	147	147	147	147
- Commercial	550 bt/sq.m/month			24	24	56	56	58	58	58	58	67	67	67	67	67	67	67	67	67	67
Inflation rate	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
Loan from Financial Agency		265	413	963	1,445	1,185	1,756	545	629												
Own Fund		111	167	402	584	495	709	228	251												
Investment from Govt.																					
Total Revenue by each year		378	583	1,401	2,066	1,797	2,583	958	1,785	892	879	1,098	1,084	1,068	1,289	1,272	1,255	1,508	1,489	1,470	1,761
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41
Constructing Expense		369	557	1,341	1,947	1,651	2,365	759	838	0	0										
Interest during Construction		7	23	24	82	29	101	13	42	0	0										
Payment for Loan from Financial Agency				44	44	201	201	392	392	468	468	468	468	468	468	468	468	468	468	468	468
Repayment for Principal	Debt F 0.70			10	11	47	50	97	101	124	130	137	144	151	158	166	175	183	193	202	212
- Public Agency				10	11	47	50	97	101	124	130	137	144	151	158	166	175	183	193	202	212
- Private Agency																					
Payment for Interest (a)				34	33	153	151	295	291	344	338	331	325	317	310	302	294	285	276	266	256
- Public Agency	5.00% per year			34	33	153	151	295	291	344	338	331	325	317	310	302	294	285	276	266	256
- Private Agency																					
Management		1	1	13	13	29	30	44	44	44	45	50	51	51	52	52	52	53	53	54	54
Managing cost	20% of Rental Fee	1	1	7	7	23	23	37	37	37	37	43	43	43	43	43	43	43	43	43	43
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.2	10.7	11.2	11.7
Tax																					
- Transfer Fee																					
- Local Improvement Tax : under calculation																					
Total Expenditure		376	581	1,422	2,086	1,910	2,696	1,208	1,316	513	513	519	519	519	520	520	521	521	522	522	523
Present Price	7,960	**The Internal Rate of Return :**				5.7%	**(30 years)**		8.2%	**(40 years)**		9.2%	**(50 years)**								
Investment		-375	-580	-1,365	-2,029	-1,680	-2,465	-773	-880												
Expenditure		-376	-581	-1,422	-2,086	-1,910	-2,696	-1,208	-1,316	-513	-513	-519	-519	-519	-520	-520	-521	-521	-522	-522	-523
Income		378	583	1,401	2,066	1,797	2,583	958	1,785	892	879	1,098	1,084	1,068	1,289	1,272	1,255	1,508	1,489	1,470	1,761
Cash Flow		-373	-578	-1,386	-2,050	-1,793	-2,579	-1,023	-411	380	366	579	564	549	769	752	734	987	968	947	1,238
Accumulated Cash Flow		-373	-951	-2,336	-4,387	-6,179	-8,758	-9,781	-10,192	-9,812	-9,446	-8,867	-8,303	-7,754	-6,985	-6,233	-5,499	-4,512	-3,544	-2,597	-1,358

Facility	Remarks	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584
Inflation of Revenue		2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82
Rental Income		1,771	1,749	2,084	2,060	2,034	2,420	2,392	2,362	2,806	2,774	2,778	3,289	3,252	3,214	3,802	3,760	3,716	4,759	4,712	4,662
Private Commercial Floor		1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380
- Rental rate	800 bt/Sq.m/month	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)
- Profit from REIT		1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380
NHA's Facilities		245	245	245	245	245	245	245	245	245	245	282	282	282	282	282	282	282	282	282	282
- Housing A	0 bt/unit/month																				
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	1,500 bt/unit/month	96	96	96	96	96	96	96	96	96	96	111	111	111	111	111	111	111	111	111	111
Inflation rate	15% 10 every year	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)
- C1 for New Comer	140 bt/sq.m/month	15	15	15	15	15	15	15	15	15	15	17	17	17	17	17	17	17	17	17	17
Inflation rate	15% 10 every year	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)
- Parking	1,500 bt/car/month	53	53	53	53	53	53	53	53	53	53	61	61	61	61	61	61	61	61	61	61
	15% 10 every year	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)
Housing, Sub Total		168	168	168	168	168	168	168	168	168	168	193	193	193	193	193	193	193	193	193	193
- Commercial	550 bt/sq.m/month	77	77	77	77	77	77	77	77	77	77	88	88	88	88	88	88	88	88	88	88
Inflation rate	15% 10 every year	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)
Loan from Financial Agency																					
Own Fund																					
Investment from Govt.																					
Total Revenue by each year		1,771	1,749	2,084	2,060	2,034	2,420	2,392	2,362	2,806	2,774	2,778	3,289	3,252	3,214	3,802	3,760	3,716	4,759	4,712	4,662
Inflation of Expenditure		2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82
Constructing Expense																					
Interest during Construction																					
Payment for Loan from Financial Agency		468	468	468	468	468	468	468	468	468	468	468	468	424	424	268	268	76	76		
Repayment for Principal	Debt F 0.70	223	234	246	258	271	285	299	314	329	346	363	381	356	374	236	248	69	73		
- Public Agency		223	234	246	258	271	285	299	314	329	346	363	381	356	374	236	248	69	73		
- Private Agency																					
Payment for Interest (a)		245	234	222	210	197	184	169	155	139	122	105	87	68	50	31	20	7	4		
- Public Agency	5.00% per year	245	234	222	210	197	184	169	155	139	122	105	87	68	50	31	20	7	4		
- Private Agency																					
Management		61	62	62	63	64	64	65	66	66	67	75	76	77	78	79	80	81	82	83	84
Managing cost	20% of Rental Fee	49	49	49	49	49	49	49	49	49	49	56	56	56	56	56	56	56	56	56	56
Land Rent	B 14 / wah2 / month	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1	18.9	19.8	20.7	21.6	22.6	23.6	24.7	25.8	26.9	28.1
Tax																					
- Transfer Fee																					
- Local Improvement Tax : under calculation																					
Total Expenditure		530	530	531	531	532	533	533	534	535	535	544	544	501	502	346	348	157	158	83	84
Investment		-530	-530	-531	-531	-532	-533	-533	-534	-535	-535	-544	-544	-501	-502	-346	-348	-157	-158	-83	-84
Expenditure		-530	-530	-531	-531	-532	-533	-533	-534	-535	-535	-544	-544	-501	-502	-346	-348	-157	-158	-83	-84
Income		1,771	1,749	2,084	2,060	2,034	2,420	2,392	2,362	2,806	2,774	2,778	3,289	3,252	3,214	3,802	3,760	3,716	5,742	4,712	4,662
Cash Flow		1,242	1,219	1,553	1,528	1,502	1,887	1,859	1,829	2,272	2,239	2,234	2,744	2,751	2,712	3,455	3,412	3,559	5,583	4,628	4,577
Accumulated Cash Flow		-117	1,102	2,656	4,184	5,686	7,573	9,432	11,260	13,532	15,771	18,005	20,749	23,500	26,212	29,667	33,079	36,638	42,222	46,850	51,428

Facility	Remarks	41	42	43	44	45	46	47	48	49	50	50years
		2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Inflation of Revenue		6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Rental Income		5,482	5,428	5,371	6,267	6,205	6,140	7,170	7,100	7,026	8,211	141,262
Private Commercial Floor		5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
- Rental rate	800 bt/Sq.m/month	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	
- Profit from REIT		5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
NHA's Facilities		324	324	324	324	324	324	324	324	324	324	11,687
- Housing A	0 bt/unit/month											
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	1,500 bt/unit/month	127	127	127	127	127	127	127	127	127	127	4,561
Inflation rate	15% 10 every year	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
- C1 for New Comer	140 bt/sq.m/month	20	20	20	20	20	20	20	20	20	20	694
Inflation rate	15% 10 every year	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
- Parking	1,500 bt/car/month	71	71	71	71	71	71	71	71	71	71	2,530
	15% 10 every year	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
Housing, Sub Total		222	222	222	222	222	222	222	222	222	222	7,971
- Commercial	550 bt/sq.m/month	101	101	101	101	101	101	101	101	101	101	3,716
Inflation rate	15% 10 every year	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
Loan from Financial Agency												7,199
Own Fund												
Investment from Govt.												
Total Revenue by each year		5,482	5,428	5,371	6,267	6,205	6,140	7,170	7,100	7,026	8,211	151,409
Inflation of Expenditure		6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Constructing Expense												9,828
Interest during Construction												
Payment for Loan from Financial Agency												14,050
Repayment for Principal	Debt F 0.70											7,199
- Public Agency												7,199
- Private Agency												
Payment for Interest (a)												6,850
- Public Agency	5.00% per year											6,850
- Private Agency												
Management		94	95	97	98	100	101	103	105	107	108	3,229
Managing cost	20% of Rental Fee	65	65	65	65	65	65	65	65	65	65	2,337
Land Rent	B 14 / wah2 / month	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax												
- Transfer Fee												
- Local Improvement Tax : under calculation												
Total Expenditure		94	95	97	98	100	101	103	105	107	108	27,426
Investment												-10,148
Expenditure		-94	-95	-97	-98	-100	-101	-103	-105	-107	-108	-27,426
Income		5,482	5,428	5,371	6,267	6,205	6,140	7,170	7,100	7,026	8,211	152,392
Cash Flow		5,388	5,332	5,274	6,168	6,105	6,039	7,067	6,995	6,919	8,103	114,818
Accumulated Cash Flow		56,816	62,148	67,423	73,591	79,696	85,734	92,802	99,796	106,716	114,818	

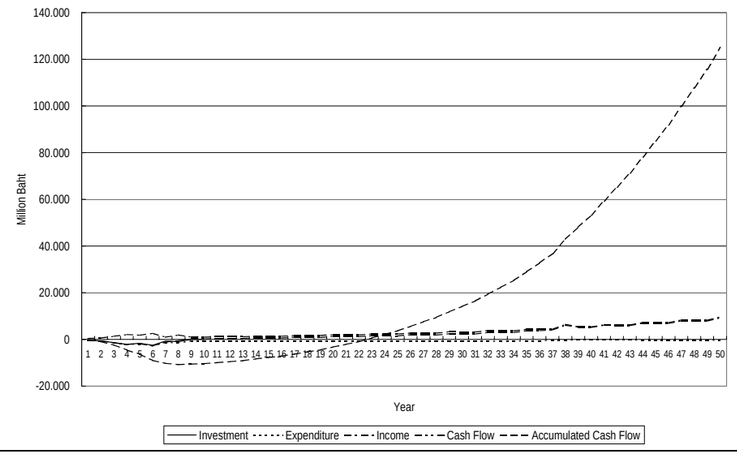


Cash Flow Analysis of Case 2

- Cash Flow of 50 years **Case 2 [Nothing Own Fund]**

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	50years
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Inflation of Revenue		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03		
Rental Income		3	3	36	36	135	135	213	964	952	939	1,166	1,152	1,137	1,399	1,382	1,365	1,667	1,648	1,628	1,975	1,954	1,931	2,331	2,306	2,280	2,740	2,712	2,683	3,211	3,179	3,146	3,754	3,718	3,679	4,379	4,337	4,294	5,465	5,418	5,368	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	161,539
Private Commercial Floor									720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548	1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	
- Profit from REIT								0	720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548	1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
NHA's Facilities		3	3	36	36	135	135	213	245	245	245	282	282	282	324	324	324	372	372	372	427	427	427	491	491	491	565	565	565	650	650	650	747	747	747	859	859	859	988	988	988	1,136	1,136	1,136	1,306	1,306	1,306	1,502	1,502	1,502	1,727	31,964
- Housing A	0 bt/unit/month																																																			
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	1,500 bt/unit/month			5	5	43	43	84	96	96	96	111	111	111	127	127	127	147	147	147	169	169	169	194	194	194	223	223	223	256	256	256	295	295	295	339	339	339	390	390	390	448	448	448	516	516	516	593	593	593	682	12,571
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- C1 for New Comer	140 bt/sq.m/month							13	15	15	15	17	17	17	20	20	20	23	23	23	26	26	26	30	30	30	35	35	35	40	40	40	46	46	46	53	53	53	60	60	60	70	70	70	80	80	80	92	92	92	106	1,933
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- Parking	1,500 bt/car/month			4	4	24	24	46	53	53	53	61	61	61	71	71	71	81	81	81	93	93	93	107	107	107	123	123	123	142	142	142	163	163	163	188	188	188	216	216	216	248	248	248	286	286	286	328	328	328	378	6,966
	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Housing, Sub Total		3	3	12	12	71	71	147	168	168	168	193	193	193	222	222	222	256	256	256	294	294	294	337	337	337	388	388	388	446	446	446	513	513	513	590	590	590	678	678	678	779	779	779	896	896	896	1,030	1,030	1,030	1,185	21,875
- Commercial	550 bt/sq.m/month			24	24	64	64	67	77	77	77	88	88	88	101	101	101	117	117	117	134	134	134	154	154	154	177	177	177	204	204	204	234	234	234	269	269	269	310	310	310	356	356	356	410	410	410	471	471	471	542	10,089
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Loan from Financial Agency		378	590	1,375	2,065	1,692	2,509	778	898																																											10,284
Own Fund																																																				
Investiment from Govt.																																																				
Total Revenue by each year		381	593	1,411	2,101	1,827	2,643	992	1,862	952	939	1,166	1,152	1,137	1,399	1,382	1,365	1,667	1,648	1,628	1,975	1,954	1,931	2,331	2,306	2,280	2,740	2,712	2,683	3,211	3,179	3,146	3,754	3,718	3,679	4,379	4,337	4,294	5,465	5,418	5,368	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	171,823
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03		
Constructing Expense		369	557	1,341	1,947	1,651	2,365	759	838	0	0																																									9,828
Interest during Construction		9	33	34	117	41	144	19	60	0	0																																										
Payment for Loan from Financial Agency				63	63	287	287	560	560	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	669	606	606	382	382	109	109														20,070
Repayment for Principal	Debt F 1.00			15	15	68	71	138	145	177	186	196	205	216	226	238	250	262	275	289	303	319	334	351	369	387	407	427	448	471	494	519	545	509	535	338	354	99	104														10,284
- Public Agency				15	15	68	71	138	145	177	186	196	205	216	226	238	250	262	275	289	303	319	334	351	369	387	407	427	448	471	494	519	545	509	535	338	354	99	104														10,284
- Private Agency																																																				
Payment for Interest (a)				48	48	219	215	422	415	492	483	473	464	453	443	431	419	407	394	380	366	350	335	318	300	282	262	242	221	198	175	150	124	97	71	45	28	10	5														9,786
- Public Agency	5.00% per year			48	48	219	215	422	415	492	483	473	464	453	443	431	419	407	394	380	366	350	335	318	300	282	262	242	221	198	175	150	124	97	71	45	28	10	5														9,786
- Private Agency																																																				
Management		1	1	13	13	33	33	49	56	56	57	64	65	65	74	74	74	85	85	86	97	98	98	112	112	113	128	129	130	147	148	149	169	170	171	194	195	196	223	224	226	257	258	259	295	296	298	339	340	342	389	7,285
Managing cost	20% of Rental Fee	1	1	7	7	27	27	43	49	49	49	56	56	56	65	65	65	74	74	74	86	86	86	98	98	98	113	113	113	130	130	130	149	149	149	172	172	172	198	198	198	227	227	227	261	261	261	300	300	300	345	6,393
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.2	10.7	11.2	11.7	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1	18.9	19.8	20.7	21.6	22.6	23.6	24.7	25.8	26.9	28.1	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax																																																				
- Transfer Fee																																																				
- Local Improvement Tax : under calculation																																																				
Total Expenditure		379	591	1,451	2,141	2,012	2,828	1,387	1,514	725	726	733	734	734	743	743	743	754	754	755	766	767	767	781	781	782	797	798	799	816	817	818	838	776	777	577	578	306	332	224	226	257	258	259	295	296	298	339	340	342	389	37,639
Present Price	7,960	**The Internal Rate of Return :**				4.9%	**(30 years)**			7.7%	**(40 years)**				8.9%	**(50 years)**																																					
Investment		-378	-590	-1,375	-2,065	-1,692	-2,509	-778	-898																																											-10,284
Expenditure		-379	-591	-1,451	-2,141	-2,012	-2,828	-1,387	-1,514	-725	-726	-733	-734	-734	-743	-743	-743	-754	-754	-755	-766	-767	-767	-781	-781	-782	-797	-798	-799	-816	-817	-818	-838	-776	-777	-577	-578	-306	-332	-224	-226	-257	-258	-259	-295	-296	-298	-339	-340	-342	-389	-37,639
Income		381	593	1,411	2,101	1,827	2,643	992	1,862	952	939	1,166	1,152	1,137	1,399	1,382	1,365	1,667	1,648	1,628	1,975	1,954	1,931	2,331	2,306	2,280	2,740	2,712	2,683	3,211	3,179	3,146	3,754	3,718	3,679	4,379	4,337	4,294	6,448	5,418	5,368	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	172,806
Cash Flow		-376	-588	-1,414	-2,104	-1,877	-2,694	-1,174	-549	227	213	433	418	403	656	639	622	913	894	874	1,209	1,187	1,164	1,550	1,525	1,499	1,943	1,914	1,884	2,395	2,362	2,328	2,916	2,941	2,902	3,802	3,760	3,988	6,116	5,193	5,142	6,038	5,982	5,924	6,954	6,891	6,824	8,010	7,937	7,862	9,225	124,882
Accumulated Cash Flow		-376	-963	-2,378	-4,482	-6,359	-9,053	-10,227	-10,777	-10,550	-10,337	-9,904	-9,485	-9,082	-8,426	-7,787	-7,165	-6,252	-5,358	-4,484	-3,275	-2,088	-924	626	2,151	3,650	5,592	7,506	9,390	11,785	14,147	16,475	19,391	22,332	25,235	29,037	32,797	36,785	42,901	48,094	53,236	59,274	65,256	71,180	78,134	85,025	91,849	99,859	107,796	115,657	124,882	



Cash Flow Analysis of Case 3

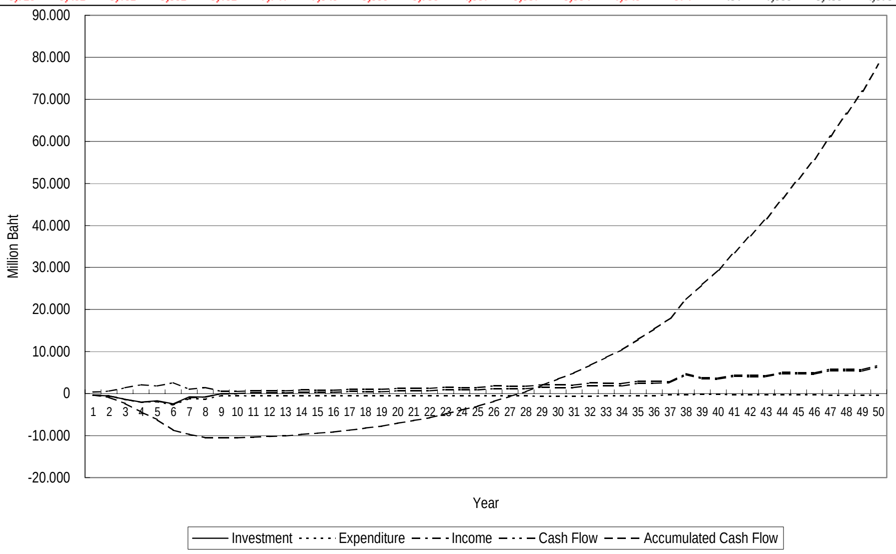
- Cash Flow of 50 years **Case 3 [Reduction of Income from Private Sector(REIT)]**

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559
Inflation of Revenue		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94
Rental Income		3	3	36	36	135	135	213	554	541	528	694	680	665	856	840
Private Commercial Floor									309	296	283	413	398	383	533	516
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)
- Profit from REIT								0	309	296	283	413	398	383	533	516
NHA's Facilities		3	3	36	36	135	135	213	245	245	245	282	282	282	324	324
- Housing A	0 bt/unit/month															
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	1,500 bt/unit/month			5	5	43	43	84	96	96	96	111	111	111	127	127
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)
- C1 for New Comer	140 bt/sq.m/month							13	15	15	15	17	17	17	20	20
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)
- Parking	1,500 bt/car/month			4	4	24	24	46	53	53	53	61	61	61	71	71
	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)
Housing, Sub Total		3	3	12	12	71	71	147	168	168	168	193	193	193	222	222
- Commercial	550 bt/sq.m/month			24	24	64	64	67	77	77	77	88	88	88	101	101
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)
Loan from Financial Agency		265	413	963	1,445	1,185	1,756	545	629							
Own Fund		111	167	402	584	495	709	228	251							
Investiment from Govt.																
Total Revenue by each year		378	583	1,401	2,066	1,814	2,600	986	1,434	541	528	694	680	665	856	840
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94
Constructing Expense		369	557	1,341	1,947	1,651	2,365	759	838	0	0					
Interest during Construction		7	23	24	82	29	101	13	42	0	0					
Payment for Loan from Financial Agency				44	44	201	201	392	392	468	468	468	468	468	468	468
Repayment for Principal	Debt F 0.70			10	11	47	50	97	101	124	130	137	144	151	158	166
- Public Agency				10	11	47	50	97	101	124	130	137	144	151	158	166
- Private Agency																
Payment for Interest (a)				34	33	153	151	295	291	344	338	331	325	317	310	302
- Public Agency	5.00% per year			34	33	153	151	295	291	344	338	331	325	317	310	302
- Private Agency																
Management		1	1	13	13	33	33	49	56	56	57	64	65	65	74	74
Managing cost	20% of Rental Fee	1	1	7	7	27	27	43	49	49	49	56	56	56	65	65
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4
Tax																
- Transfer Fee																
- Local Improvement Tax : under calculation																
Total Expenditure		376	581	1,422	2,086	1,913	2,699	1,214	1,328	525	525	532	533	533	542	542
Present Price	7,960	**The Internal Rate of Return :**				1.5%	**(30 years)**		5.3%	**(40 years)**		6.9%	**(50 years)**			
Investment		-375	-580	-1,365	-2,029	-1,680	-2,465	-773	-880							
Expenditure		-376	-581	-1,422	-2,086	-1,913	-2,699	-1,214	-1,328	-525	-525	-532	-533	-533	-542	-542
Income		378	583	1,401	2,066	1,814	2,600	986	1,434	541	528	694	680	665	856	840
Cash Flow		-373	-578	-1,386	-2,050	-1,779	-2,565	-1,001	-774	17	3	162	147	132	314	297
Accumulated Cash Flow		-373	-951	-2,336	-4,387	-6,165	-8,730	-9,731	-10,504	-10,488	-10,484	-10,322	-10,175	-10,043	-9,729	-9,432

Facility	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574
Inflation of Revenue	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75
Rental Income	822	1,043	1,024	1,004	1,257	1,236	1,213	1,505	1,481	1,455	1,791	1,763	1,733	2,120	2,088
Private Commercial Floor	499	671	652	632	830	809	786	1,014	989	963	1,226	1,198	1,168	1,470	1,438
- Rental rate	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)
- Profit from REIT	499	671	652	632	830	809	786	1,014	989	963	1,226	1,198	1,168	1,470	1,438
NHA's Facilities	324	372	372	372	427	427	427	491	491	491	565	565	565	650	650
- Housing A															
Inflation rate	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	127	147	147	147	169	169	169	194	194	194	223	223	223	256	256
Inflation rate	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)
- C1 for New Comer	20	23	23	23	26	26	26	30	30	30	35	35	35	40	40
Inflation rate	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)
- Parking	71	81	81	81	93	93	93	107	107	107	123	123	123	142	142
	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)
Housing, Sub Total	222	256	256	256	294	294	294	337	337	337	388	388	388	446	446
- Commercial	101	117	117	117	134	134	134	154	154	154	177	177	177	204	204
Inflation rate	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)
Loan from Financial Agency															
Own Fund															
Investiment from Govt.															
Total Revenue by each year	822	1,043	1,024	1,004	1,257	1,236	1,213	1,505	1,481	1,455	1,791	1,763	1,733	2,120	2,088
Inflation of Expenditure	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75
Constructing Expense															
Interest during Construction															
Payment for Loan from Financial Agency	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468
Repayment for Principal	175	183	193	202	212	223	234	246	258	271	285	299	314	329	346
- Public Agency	175	183	193	202	212	223	234	246	258	271	285	299	314	329	346
- Private Agency															
Payment for Interest (a)	294	285	276	266	256	245	234	222	210	197	184	169	155	139	122
- Public Agency	294	285	276	266	256	245	234	222	210	197	184	169	155	139	122
- Private Agency															
Management	74	85	85	86	97	98	98	112	112	113	128	129	130	147	148
Managing cost	65	74	74	74	86	86	86	98	98	98	113	113	113	130	130
Land Rent	9.8	10.2	10.7	11.2	11.7	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1
Tax															
- Transfer Fee															
- Local Improvement Tax : under calculation															
Total Expenditure	543	553	553	554	565	566	567	580	581	581	597	597	598	616	616
Investment															
Expenditure	-543	-553	-553	-554	-565	-566	-567	-580	-581	-581	-597	-597	-598	-616	-616
Income	822	1,043	1,024	1,004	1,257	1,236	1,213	1,505	1,481	1,455	1,791	1,763	1,733	2,120	2,088
Cash Flow	280	490	471	450	692	670	647	925	900	874	1,194	1,165	1,135	1,504	1,471
Accumulated Cash Flow	-9,152	-8,662	-8,192	-7,741	-7,049	-6,380	-5,733	-4,807	-3,907	-3,034	-1,840	-674	461	1,965	3,436

Facility	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	50years
	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Inflation of Revenue	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Rental Income	2,054	2,499	2,462	2,424	2,935	2,894	2,850	3,805	3,757	3,708	4,385	4,331	4,274	5,053	4,991	4,926	5,823	5,752	5,679	6,710	108,766
Private Commercial Floor	1,404	1,752	1,715	1,677	2,076	2,035	1,991	2,817	2,770	2,720	3,249	3,195	3,138	3,747	3,685	3,621	4,321	4,251	4,177	4,984	76,802
- Rental rate	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	
- Profit from REIT	1,404	1,752	1,715	1,677	2,076	2,035	1,991	2,817	2,770	2,720	3,249	3,195	3,138	3,747	3,685	3,621	4,321	4,251	4,177	4,984	76,802
NHA's Facilities	650	747	747	747	859	859	859	988	988	988	1,136	1,136	1,136	1,306	1,306	1,306	1,502	1,502	1,502	1,727	31,964
- Housing A																					
Inflation rate	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	256	295	295	295	339	339	339	390	390	390	448	448	448	516	516	516	593	593	593	682	12,571
Inflation rate	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- C1 for New Comer	40	46	46	46	53	53	53	60	60	60	70	70	70	80	80	80	92	92	92	106	1,933
Inflation rate	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- Parking	142	163	163	163	188	188	188	216	216	216	248	248	248	286	286	286	328	328	328	378	6,966
	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Housing, Sub Total	446	513	513	513	590	590	590	678	678	678	779	779	779	896	896	896	1,030	1,030	1,030	1,185	21,875
- Commercial	204	234	234	234	269	269	269	310	310	310	356	356	356	410	410	410	471	471	471	542	10,089
Inflation rate	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Loan from Financial Agency																					7,199
Own Fund																					
Investiment from Govt.																					
Total Revenue by each year	2,054	2,499	2,462	2,424	2,935	2,894	2,850	3,805	3,757	3,708	4,385	4,331	4,274	5,053	4,991	4,926	5,823	5,752	5,679	6,710	118,913
Inflation of Expenditure	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Constructing Expense																					9,828
Interest during Construction																					
Payment for Loan from Financial Agency	468	468	424	424	268	268	76	76													14,050
Repayment for Principal	363	381	356	374	236	248	69	73													7,199
- Public Agency	363	381	356	374	236	248	69	73													7,199
- Private Agency																					
Payment for Interest (a)	105	87	68	50	31	20	7	4													6,850
- Public Agency	105	87	68	50	31	20	7	4													6,850
- Private Agency																					
Management	149	169	170	171	194	195	196	223	224	226	257	258	259	295	296	298	339	340	342	389	7,285
Managing cost	130	149	149	149	172	172	172	198	198	198	227	227	227	261	261	261	300	300	300	345	6,393
Land Rent	18.9	19.8	20.7	21.6	22.6	23.6	24.7	25.8	26.9	28.1	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax																					
- Transfer Fee																					
- Local Improvement Tax : under calculation																					
Total Expenditure	617	638	594	595	462	463	273	300	224	226	257	258	259	295	296	298	339	340	342	389	31,482
Investment																					-10,148
Expenditure	-617	-638	-594	-595	-462	-463	-273	-300	-224	-226	-257	-258	-259	-295	-296	-298	-339	-340	-342	-389	-31,482
Income	2,054	2,499	2,462	2,424	2,935	2,894	2,850	4,788	3,757	3,708	4,385	4,331	4,274	5,053	4,991	4,926	5,823	5,752	5,679	6,710	119,896
Cash Flow	1,437	1,861	1,868	1,829	2,473	2,431	2,577	4,488	3,533	3,482	4,128	4,073	4,015	4,758	4,695	4,629	5,484	5,412	5,336	6,321	78,267
Accumulated Cash Flow	4,873	6,734	8,602	10,431	12,904	15,335	17,912	22,400	25,933	29,415	33,543	37,616	41,631	46,389	51,084	55,713	61,197	66,609	71,945	78,267	

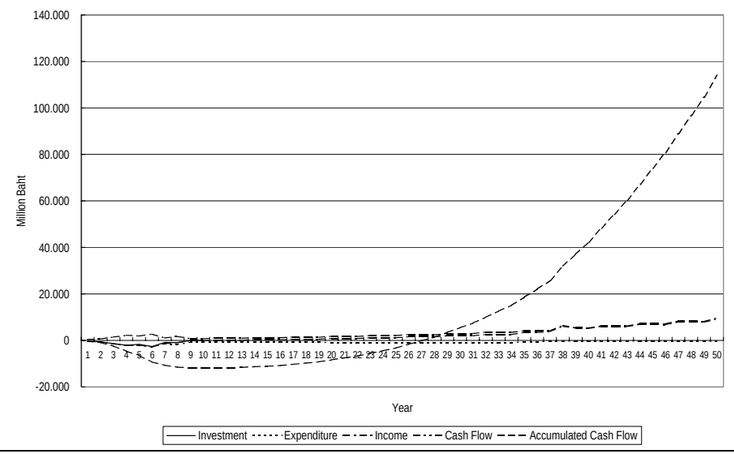


Cash Flow Analysis of Case 4

- Cash Flow of 50 years **Case 4 [Increasing Interest Rate]**

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	50years
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Inflation of Revenue		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03		
Rental Income		3	3	36	36	135	135	213	733	721	707	935	921	906	1,168	1,151	1,134	1,436	1,417	1,397	1,744	1,723	1,700	2,100	2,075	2,049	2,509	2,481	2,451	2,980	2,948	2,915	3,523	3,487	3,448	4,148	4,106	4,063	5,465	5,418	5,368	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	154,608
Private Commercial Floor									489	476	463	654	639	624	844	828	811	1,064	1,045	1,025	1,317	1,295	1,273	1,608	1,584	1,558	1,944	1,916	1,886	2,330	2,298	2,265	2,776	2,739	2,701	3,289	3,247	3,204	4,478	4,430	4,380	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	122,644
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	
- Profit from REIT								0	489	476	463	654	639	624	844	828	811	1,064	1,045	1,025	1,317	1,295	1,273	1,608	1,584	1,558	1,944	1,916	1,886	2,330	2,298	2,265	2,776	2,739	2,701	3,289	3,247	3,204	4,478	4,430	4,380	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	122,644
NHA's Facilities		3	3	36	36	135	135	213	245	245	245	282	282	282	324	324	324	372	372	372	427	427	427	491	491	491	565	565	565	650	650	650	747	747	747	859	859	859	988	988	988	1,136	1,136	1,136	1,306	1,306	1,306	1,502	1,502	1,502	1,727	31,964
- Housing A	0 bt/unit/month																																																			
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	1,500 bt/unit/month			5	5	43	43	84	96	96	96	111	111	111	127	127	127	147	147	147	169	169	169	194	194	194	223	223	223	256	256	256	295	295	295	339	339	339	390	390	390	448	448	448	516	516	516	593	593	593	682	12,571
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- C1 for New Comer	140 bt/sq.m/month							13	15	15	15	17	17	17	20	20	20	23	23	23	26	26	26	30	30	30	35	35	35	40	40	40	46	46	46	53	53	53	60	60	60	70	70	70	80	80	80	92	92	92	106	1,933
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- Parking	1,500 bt/car/month			4	4	24	24	46	53	53	53	61	61	61	71	71	71	81	81	81	93	93	93	107	107	107	123	123	123	142	142	142	163	163	163	188	188	188	216	216	216	248	248	248	286	286	286	328	328	328	378	6,966
	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Housing, Sub Total		3	3	12	12	71	71	147	168	168	168	193	193	193	222	222	222	256	256	256	294	294	294	337	337	337	388	388	388	446	446	446	513	513	513	590	590	590	678	678	678	779	779	779	896	896	896	1,030	1,030	1,030	1,185	21,875
- Commercial	550 bt/sq.m/month			24	24	64	64	67	77	77	77	88	88	88	101	101	101	117	117	117	134	134	134	154	154	154	177	177	177	204	204	204	234	234	234	269	269	269	310	310	310	356	356	356	410	410	410	471	471	471	542	10,089
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Loan from Financial Agency		271	437	986	1,530	1,213	1,860	558	672																																											7,526
Own Fund		111	167	402	584	495	709	228	251																																											
Investment from Govt.																																																				
Total Revenue by each year		385	607	1,425	2,150	1,843	2,704	999	1,657	721	707	935	921	906	1,168	1,151	1,134	1,436	1,417	1,397	1,744	1,723	1,700	2,100	2,075	2,049	2,509	2,481	2,451	2,980	2,948	2,915	3,523	3,487	3,448	4,148	4,106	4,063	5,465	5,418	5,368	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	165,083
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03		
Constructing Expense		369	557	1,341	1,947	1,651	2,365	759	838	0	0																																										9,828
Interest during Construction		13	47	47	167	58	204	27	85	0	0																																										
Payment for Loan from Financial Agency				75	75	342	342	668	668	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	723	723	456	456	130	130														23,952
Repayment for Principal	Debt F 0.70			4	5	20	23	43	48	60	66	73	80	88	97	106	117	129	142	156	171	189	207	228	251	276	304	334	368	404	445	489	538	517	569	359	394	108	119														7,526
- Public Agency				4	5	20	23	43	48	60	66	73	80	88	97	106	117	129	142	156	171	189	207	228	251	276	304	334	368	404	445	489	538	517	569	359	394	108	119														7,526
- Private Agency																																																					
Payment for Interest (a)				71	70	321	319	624	620	738	732	726	718	710	702	692	681	670	657	643	627	610	591	570	547	522	495	464	431	394	354	309	260	206	155	98	62	23	12														16,425
- Public Agency	10.00% per year			71	70	321	319	624	620	738	732	726	718	710	702	692	681	670	657	643	627	610	591	570	547	522	495	464	431	394	354	309	260	206	155	98	62	23	12														16,425
- Private Agency																																																					
Management		1	1	13	13	33	33	49	56	56	57	64	65	65	74	74	74	85	85	86	97	98	98	112	112	113	128	129	130	147	148	149	169	170	171	194	195	196	223	224	226	257	258	259	295	296	298	339	340	342	389	7,285
Managing cost	20% of Rental Fee	1	1	7	7	27	27	43	49	49	49	56	56	56	65	65	65	74	74	74	86	86	86	98	98	98	113	113	113	130	130	130	149	149	149	172	172	172	198	198	198	227	227	227	261	261	261	300	300	300	345	6,393
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.2	10.7	11.2	11.7	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1	18.9	19.8	20.7	21.6	22.6	23.6	24.7	25.8	26.9	28.1	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax																																																					
- Transfer Fee																																																					
- Local Improvement Tax : under calculation																																																					
Total Expenditure		382	604	1,476	2,202	2,083	2,944	1,503	1,647	855	855	863	863	863	872	872	873	883	883	884	896	896	897	910	911	911	927	927	928	946	946	947	968	893	894	651	652	327	354	224	226	257	258	259	295	296	298	339	340	342	389	41,711
Present Price	7,960	**The Internal Rate of Return :**				2.0%	**(30 years)**		6.0%	**(40 years)**		7.6%	**(50 years)**																																									
Investment		-382	-604	-1,388	-2,114	-1,709	-2,569	-786	-923																																												-10,475
Expenditure		-382	-604	-1,476	-2,202	-2,083	-2,944	-1,503	-1,647	-855	-855	-863	-863	-863	-872	-872	-873	-883	-883	-884	-896	-896	-897	-910	-911	-911	-927	-927	-928	-946	-946	-947	-968	-893	-894	-651	-652	-327	-354	-224	-226	-257	-258	-259	-295	-296	-298	-339	-340	-342	-389	-41,711
Income		385	607	1,425	2,150	1,843	2,704	999	1,657	721	707	935	921	906	1,168	1,151	1,134	1,436	1,417	1,397	1,744	1,723	1,700	2,100	2,075	2,049	2,509	2,481	2,451	2,980	2,948	2,915	3,523	3,487	3,448	4,148	4,106	4,063	6,448	5,418	5,368	6,294	6,240	6,183	7,249	7,187	7,122	8,348	8,278	8,204	9,614	166,065
Cash Flow		-379	-601	-1,440	-2,166	-1,949	-2,809	-1,290	-914	-134	-147	73	58	43	296	279	261	553	534	513	849	827	804	1,190	1,164	1,138	1,582	1,554	1,524	2,035	2,002	1,968	2,555	2,593	2,554	3,497	3,454	3,736	6,094	5,193	5,142	6,038	5,982	5,924	6,954	6,891	6,824	8,010	7,937	7,862	9,225	113,880
Accumulated Cash Flow		-379	-981	-2,421	-4,587	-6,536	-9,345	-10,635	-11,548	-11,682	-11,830	-11,757	-11,699	-11,656	-11,360	-11,081	-10,820	-10,267	-9,733	-9,220	-8,371	-7,545	-6,741	-5,551	-4,387	-3,249	-1,667	-113	1,410	3,445	5,447	7,414	9,970	12,563	15,117	18,614	22,069	25,804	31,899	37,092	42,234	48,272	54,254	60,178	67,132	74,023	80,847	88,856	96,794	104,655	113,880	

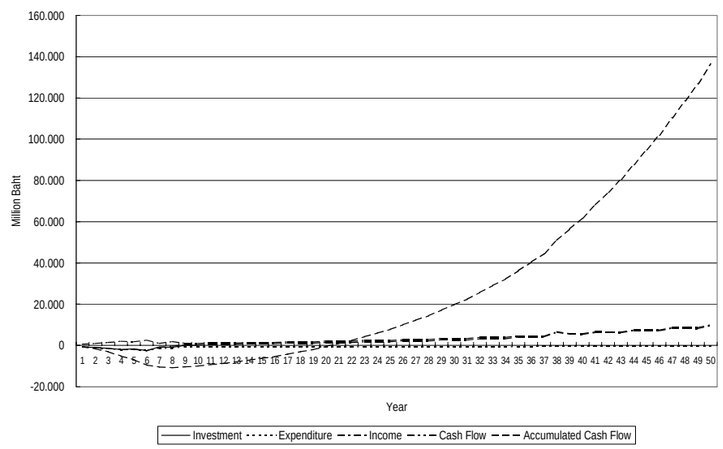


Cash Flow Analysis of Case 5

- Cash Flow of 50 years **Case 5 [Increasing number of move-out residents]**

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	50years
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Inflation of Revenue		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03		
Rental Income		3	3	36	36	135	135	270	1,030	1,017	1,004	1,242	1,227	1,212	1,486	1,469	1,452	1,767	1,748	1,728	2,090	2,068	2,046	2,463	2,438	2,412	2,892	2,864	2,834	3,386	3,354	3,320	3,955	3,918	3,880	4,610	4,568	4,524	5,730	5,683	5,633	6,599	6,545	6,488	7,599	7,538	7,473	8,752	8,681	8,607	10,078	170,027
Private Commercial Floor									720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548	1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)		
- Profit from REIT								0	720	707	694	885	870	855	1,075	1,059	1,042	1,295	1,276	1,256	1,548	1,526	1,504	1,839	1,815	1,789	2,175	2,147	2,117	2,562	2,530	2,496	3,007	2,970	2,932	3,520	3,478	3,435	4,478	4,430	4,380	5,159	5,104	5,048	5,943	5,881	5,816	6,847	6,776	6,702	7,887	129,575
NHA's Facilities		3	3	36	36	135	135	270	311	311	311	357	357	357	410	410	410	472	472	472	542	542	542	623	623	623	717	717	717	824	824	824	948	948	948	1,090	1,090	1,090	1,253	1,253	1,253	1,441	1,441	1,441	1,656	1,656	1,656	1,905	1,905	1,905	2,191	40,452
- Housing A	0 bt/unit/month																																																			
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	1,500 bt/unit/month			5	5	43	43	67	77	77	77	89	89	89	102	102	102	117	117	117	135	135	135	155	155	155	178	178	178	205	205	205	236	236	236	271	271	271	312	312	312	359	359	359	412	412	412	474	474	474	546	10,077
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- C1 for New Comer	140 bt/sq.m/month							87	100	100	100	115	115	115	132	132	132	152	152	152	175	175	175	201	201	201	231	231	231	265	265	265	305	305	305	351	351	351	404	404	404	464	464	464	534	534	534	614	614	614	706	12,915
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
- Parking	1,500 bt/car/month			4	4	24	24	46	53	53	53	61	61	61	71	71	71	81	81	81	93	93	93	107	107	107	123	123	123	142	142	142	163	163	163	188	188	188	216	216	216	248	248	248	286	286	286	328	328	328	378	6,966
	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Housing, Sub Total		3	3	12	12	71	71	204	234	234	234	269	269	269	309	309	309	355	355	355	408	408	408	469	469	469	540	540	540	621	621	621	713	713	713	820	820	820	943	943	943	1,084	1,084	1,084	1,247	1,247	1,247	1,434	1,434	1,434	1,649	30,363
- Commercial	550 bt/sq.m/month			24	24	64	64	67	77	77	77	88	88	88	101	101	101	117	117	117	134	134	134	154	154	154	177	177	177	204	204	204	234	234	234	269	269	269	310	310	310	356	356	356	410	410	410	471	471	471	542	10,089
Inflation rate	15% 3 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	(7.08)	(7.08)	(8.14)	(8.14)	(8.14)	(9.36)	
Loan from Financial Agency		451	714	963	1,445	1,185	1,756	522	627																																											7,662
Own Fund		189	289	402	584	495	709	218	251																																											
Investiment from Govt.																																																				
Total Revenue by each year		642	1,006	1,401	2,066	1,814	2,600	1,010	1,909	1,017	1,004	1,242	1,227	1,212	1,486	1,469	1,452	1,767	1,748	1,728	2,090	2,068	2,046	2,463	2,438	2,412	2,892	2,864	2,834	3,386	3,354	3,320	3,955	3,918	3,880	4,610	4,568	4,524	5,730	5,683	5,633	6,599	6,545	6,488	7,599	7,538	7,473	8,752	8,681	8,607	10,078	180,827
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11	2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47	4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03		
Constructing Expense		628	964	1,341	1,947	1,651	2,365	727	838	0	0																																										10,461
Interest during Construction		11	39	24	82	29	101	13	41	0	0																																										
Payment for Loan from Financial Agency				76	76	232	232	424	424	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	498	423	423	266	266	75	75														14,952
Repayment for Principal	Debt F 0.70			18	18	56	58	106	111	134	140	147	155	162	171	179	188	197	207	218	229	240	252	265	278	292	306	322	338	355	372	391	410	355	373	235	247	68	71														7,662
- Public Agency				18	18	56	58	106	111	134	140	147	155	162	171	179	188	197	207	218	229	240	252	265	278	292	306	322	338	355	372	391	410	355	373	235	247	68	71														7,662
- Private Agency																																																					
Payment for Interest (a)				58	57	177	174	318	313	365	358	351	344	336	328	319	310	301	291	281	270	258	246	234	221	207	192	177	161	144	126	108	88	67	50	31	19	7	4														7,291
- Public Agency	5.00% per year			58	57	177	174	318	313	365	358	351	344	336	328	319	310	301	291	281	270	258	246	234	221	207	192	177	161	144	126	108	88	67	50	31	19	7	4														7,291
- Private Agency																																																					
Management		1	1	13	13	33	33	61	69	69	70	79	80	80	91	91	92	105	105	105	120	121	121	138	139	139	158	159	160	182	183	184	209	210	211	240	241	243	276	278	279	318	319	320	365	366	368	419	421	423	482	8,982
Managing cost	20% of Rental Fee	1	1	7	7	27	27	54	62	62	62	71	71	71	82	82	82	94	94	94	108	108	108	125	125	125	143	143	143	165	165	165	190	190	190	218	218	218	251	251	251	288	288	288	331	331	331	381	381	381	438	8,090
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.2	10.7	11.2	11.7	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1	18.9	19.8	20.7	21.6	22.6	23.6	24.7	25.8	26.9	28.1	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax:																																																					
- Transfer Fee																																																					
- Local Improvement Tax : under calculation																																																					
Total Expenditure		640	1,004	1,453	2,118	1,945	2,731	1,224	1,371	568	568	578	578	578	589	590	590	603	603	604	618	619	620	636	637	638	657	658	658	681	681	682	708	633	634	507	508	317	351	278	279	318	319	320	365	366	368	419	421	423	482	34,734
Present Price	8,556	**The Internal Rate of Return :**		6.3%		**(30 years)**			8.6%	**(40 years)**			9.6%	**(50 years)**																																							
Investment		-639	-1,003	-1,365	-2,029	-1,680	-2,465	-740	-879																																												-10,800
Expenditure		-640	-1,004	-1,453	-2,118	-1,945	-2,731	-1,224	-1,371	-568	-568	-578	-578	-578	-589	-590	-590	-603	-603	-604	-618	-619	-620	-636	-637	-638	-657	-658	-658	-681	-681	-682	-708	-633	-634	-507	-508	-317	-351	-278	-279	-318	-319	-320	-365	-366	-368	-419	-421	-423	-482	-34,734
Income		642	1,006	1,401	2,066	1,814	2,600	1,010	1,909	1,017	1,004	1,242	1,227	1,212	1,486	1,469	1,452	1,767	1,748	1,728	2,090	2,068	2,046	2,463	2,438	2,412	2,892	2,864	2,834	3,386	3,354	3,320	3,955	3,918	3,880	4,610	4,568	4,524	6,777	5,683	5,633	6,599	6,545	6,488	7,599	7,538	7,473	8,752	8,681	8,607	10,078	181,873
Cash Flow		-637	-1,001	-1,417	-2,082	-1,810	-2,596	-954	-341	450	436	664	649	634	896	879	862	1,164	1,144	1,124	1,471	1,449	1,426	1,826	1,801	1,775	2,235	2,206	2,176	2,705	2,672	2,638	3,247	3,285	3,246	4,103	4,060	4,207	6,425	5,405	5,354	6,282	6,226	6,168	7,235	7,171	7,105	8,332	8,260	8,184	9,596	136,339
Accumulated Cash Flow		-637	-1,638	-3,055	-5,137	-6,947	-9,544	-10,497	-10,839	-10,389	-9,953	-9,289	-8,639	-8,006	-7,109	-6,230	-5,368	-4,205	-3,060	-1,936	-464	985	2,411	4,238	6,039	7,813	10,048	12,254	14,430	17,135	19,807	22,445	25,692	28,978	32,224	36,327	40,387	44,594	51,020	56,425	61,780	68,062	74,288	80,456	87,690	94,861	101,966	110,299	118,559	126,743	136,339	



Cash Flow Analysis of Case 6

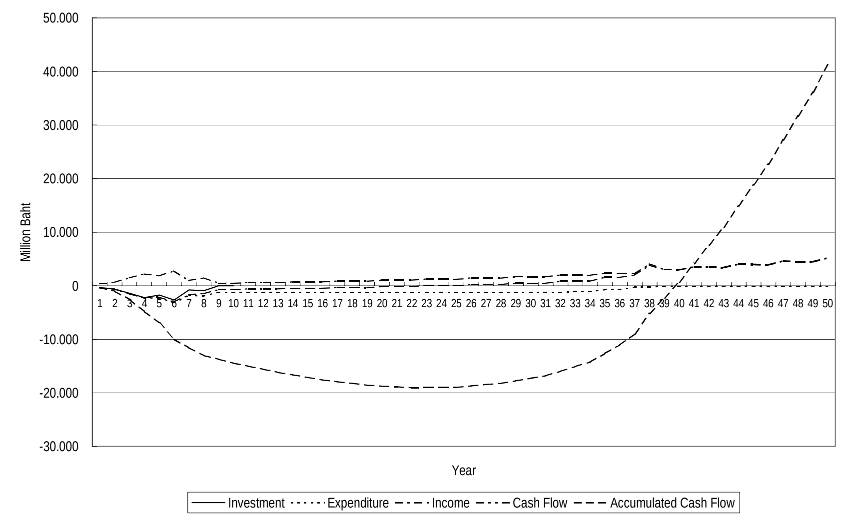
- Cash Flow of 50 years   Case 6 [Reduction of hike rent, Without own fund, Decreasing commercial income, and Increasing loan interest rate]

*The price is shown in millions

Facility	Remarks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561
Inflation of Revenue		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11
Rental Income		3	3	36	36	117	117	185	495	482	469	626	612	597	746	729	712	884
Private Commercial Floor									309	296	283	413	398	383	533	516	499	671
- Rental rate	800 bt/Sq.m/month							(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.52)
- Profit from REIT								0	309	296	283	413	398	383	533	516	499	671
NHA's Facilities		3	3	36	36	117	117	185	185	185	185	213	213	213	213	213	213	213
- Housing A	0 bt/unit/month																	
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	1,500 bt/unit/month			5	5	37	37	73	73	73	73	84	84	84	84	84	84	84
Inflation rate	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
- C1 for New Comer	140 bt/sq.m/month							11	11	11	11	13	13	13	13	13	13	13
Inflation rate	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
- Parking	1,500 bt/car/month			4	4	21	21	40	40	40	40	46	46	46	46	46	46	46
	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
Housing, Sub Total		3	3	12	12	62	62	128	128	128	128	147	147	147	147	147	147	147
- Commercial	550 bt/sq.m/month			24	24	56	56	58	58	58	58	67	67	67	67	67	67	67
Inflation rate	15% 10 every year	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)	(1.15)
Loan from Financial Agency		387	624	1,409	2,185	1,733	2,656	797	960									
Own Fund																		
Investment from Govt.																		
Total Revenue by each year		390	627	1,445	2,222	1,850	2,774	983	1,454	482	469	626	612	597	746	729	712	884
Inflation of Expenditure		1.05	1.09	1.14	1.19	1.25	1.30	1.36	1.42	1.49	1.55	1.62	1.70	1.77	1.85	1.94	2.02	2.11
Constructing Expense		369	557	1,341	1,947	1,651	2,365	759	838	0	0							
Interest during Construction		18	67	67	238	83	292	38	122	0	0							
Payment for Loan from Financial Agency				107	107	488	488	954	954	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141
Repayment for Principal	Debt F 1.00			6	7	29	32	62	68	86	94	104	114	126	138	152	167	184
- Public Agency				6	7	29	32	62	68	86	94	104	114	126	138	152	167	184
- Private Agency																		
Payment for Interest (a)				101	100	459	456	892	886	1,055	1,046	1,037	1,026	1,015	1,002	988	973	956
- Public Agency	10.00% per year			101	100	459	456	892	886	1,055	1,046	1,037	1,026	1,015	1,002	988	973	956
- Private Agency																		
Management		1	1	13	13	29	30	44	44	44	45	50	51	51	52	52	52	53
Managing cost	20% of Rental Fee	1	1	7	7	23	23	37	37	37	37	43	43	43	43	43	43	43
Land Rent	B 14 / wah2 / month			5.5	5.8	6.0	6.3	6.6	6.9	7.2	7.5	7.9	8.2	8.6	9.0	9.4	9.8	10.2
Tax																		
- Transfer Fee																		
- Local Improvement Tax : under calculation																		
Total Expenditure		388	624	1,528	2,306	2,251	3,175	1,795	1,958	1,185	1,185	1,191	1,191	1,192	1,192	1,192	1,193	1,193
Present Price	7,960	**The Internal Rate of Return :**			-11.9%		**(30 years)**		0.1%	**(40 years)**		3.4%	**(50 years)**					
Investment		-387	-624	-1,409	-2,185	-1,733	-2,656	-797	-960									
Expenditure		-388	-624	-1,528	-2,306	-2,251	-3,175	-1,795	-1,958	-1,185	-1,185	-1,191	-1,191	-1,192	-1,192	-1,192	-1,193	-1,193
Income		390	627	1,445	2,222	1,850	2,774	983	1,454	482	469	626	612	597	746	729	712	884
Cash Flow		-385	-621	-1,492	-2,270	-2,134	-3,057	-1,610	-1,463	-703	-717	-565	-580	-595	-446	-463	-481	-309
Accumulated Cash Flow		-385	-1,006	-2,499	-4,768	-6,902	-9,960	-11,569	-13,033	-13,736	-14,452	-15,017	-15,597	-16,192	-16,638	-17,101	-17,582	-17,891

Facility	Remarks	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
		2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578
Inflation of Revenue		2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47
Rental Income		865	845	1,043	1,053	1,031	1,259	1,234	1,208	1,470	1,442	1,413	1,715	1,683	1,686	2,033	1,997	1,958
Private Commercial Floor		652	632	830	809	786	1,014	989	963	1,226	1,198	1,168	1,470	1,438	1,404	1,752	1,715	1,677
- Rental rate	800 bt/Sq.m/month	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(2.01)	(2.01)	(2.01)	(2.31)	(2.31)	(2.31)	(2.66)	(2.66)	(2.66)	(3.06)	(3.06)	(3.06)
- Profit from REIT		652	632	830	809	786	1,014	989	963	1,226	1,198	1,168	1,470	1,438	1,404	1,752	1,715	1,677
NHA's Facilities		213	213	213	245	245	245	245	245	245	245	245	245	245	282	282	282	282
- Housing A	0 bt/unit/month																	
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
- C1 for Returnee	1,500 bt/unit/month	84	84	84	96	96	96	96	96	96	96	96	96	96	111	111	111	111
Inflation rate	15% 10 every year	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)
- C1 for New Comer	140 bt/sq.m/month	13	13	13	15	15	15	15	15	15	15	15	15	15	17	17	17	17
Inflation rate	15% 10 every year	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)
- Parking	1,500 bt/car/month	46	46	46	53	53	53	53	53	53	53	53	53	53	61	61	61	61
	15% 10 every year	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)
Housing, Sub Total		147	147	147	168	168	168	168	168	168	168	168	168	168	193	193	193	193
- Commercial	550 bt/sq.m/month	67	67	67	77	77	77	77	77	77	77	77	77	77	88	88	88	88
Inflation rate	15% 10 every year	(1.15)	(1.15)	(1.15)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.32)	(1.52)	(1.52)	(1.52)	(1.52)
Loan from Financial Agency																		
Own Fund																		
Investment from Govt.																		
Total Revenue by each year		865	845	1,043	1,053	1,031	1,259	1,234	1,208	1,470	1,442	1,413	1,715	1,683	1,686	2,033	1,997	1,958
Inflation of Expenditure		2.21	2.31	2.41	2.52	2.63	2.75	2.88	3.01	3.14	3.28	3.43	3.58	3.75	3.91	4.09	4.27	4.47
Constructing Expense																		
Interest during Construction																		
Payment for Loan from Financial Agency		1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,141	1,033	1,033
Repayment for Principal	Debt F 1.00	202	223	245	269	296	326	359	394	434	477	525	578	635	699	769	738	812
- Public Agency		202	223	245	269	296	326	359	394	434	477	525	578	635	699	769	738	812
- Private Agency																		
Payment for Interest (a)		938	918	896	871	844	815	782	746	707	663	615	563	505	442	372	295	221
- Public Agency	10.00% per year	938	918	896	871	844	815	782	746	707	663	615	563	505	442	372	295	221
- Private Agency																		
Management		53	54	54	61	62	62	63	64	64	65	66	66	67	75	76	77	78
Managing cost	20% of Rental Fee	43	43	43	49	49	49	49	49	49	49	49	49	49	56	56	56	56
Land Rent	B 14 / wah2 / month	10.7	11.2	11.7	12.2	12.7	13.3	13.9	14.5	15.2	15.9	16.6	17.3	18.1	18.9	19.8	20.7	21.6
Tax																		
- Transfer Fee																		
- Local Improvement Tax : under calculation																		
Total Expenditure		1,194	1,194	1,195	1,202	1,202	1,203	1,203	1,204	1,205	1,205	1,206	1,207	1,208	1,216	1,217	1,110	1,111
Investment																		
Expenditure		-1,194	-1,194	-1,195	-1,202	-1,202	-1,203	-1,203	-1,204	-1,205	-1,205	-1,206	-1,207	-1,208	-1,216	-1,217	-1,110	-1,111
Income		865	845	1,043	1,053	1,031	1,259	1,234	1,208	1,470	1,442	1,413	1,715	1,683	1,686	2,033	1,997	1,958
Cash Flow		-329	-349	-152	-148	-171	56	31	4	266	237	207	508	475	470	816	886	847
Accumulated Cash Flow		-18,220	-18,569	-18,721	-18,869	-19,040	-18,984	-18,954	-18,949	-18,683	-18,446	-18,239	-17,731	-17,256	-16,786	-15,970	-15,083	-14,236

Facility	Remarks	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	50years
		2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	Total
Inflation of Revenue		4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Rental Income		2,358	2,316	2,273	3,099	3,051	3,002	3,573	3,519	3,462	4,071	4,009	3,944	4,645	4,574	4,501	5,307	88,488
Private Commercial Floor		2,076	2,035	1,991	2,817	2,770	2,720	3,249	3,195	3,138	3,747	3,685	3,621	4,321	4,251	4,177	4,984	76,802
- Rental rate	800 bt/Sq.m/month	(3.52)	(3.52)	(3.52)	(4.05)	(4.05)	(4.05)	(4.65)	(4.65)	(4.65)	(5.35)	(5.35)	(5.35)	(6.15)	(6.15)	(6.15)	(7.08)	
- Profit from REIT		2,076	2,035	1,991	2,817	2,770	2,720	3,249	3,195	3,138	3,747	3,685	3,621	4,321	4,251	4,177	4,984	76,802
NHA's Facilities		282	282	282	282	282	282	324	324	324	324	324	324	324	324	324	324	11,687
- Housing A	0 bt/unit/month																	
Inflation rate		(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)	
- C1 for Returnee	1,500 bt/unit/month	111	111	111	111	111	111	127	127	127	127	127	127	127	127	127	127	4,561
Inflation rate	15% 10 every year	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
- C1 for New Comer	140 bt/sq.m/month	17	17	17	17	17	17	20	20	20	20	20	20	20	20	20	20	694
Inflation rate	15% 10 every year	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
- Parking	1,500 bt/car/month	61	61	61	61	61	61	71	71	71	71	71	71	71	71	71	71	2,530
	15% 10 every year	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
Housing, Sub Total		193	193	193	193	193	193	222	222	222	222	222	222	222	222	222	222	7,971
- Commercial	550 bt/sq.m/month	88	88	88	88	88	88	101	101	101	101	101	101	101	101	101	101	3,716
Inflation rate	15% 10 every year	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.52)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	(1.75)	
Loan from Financial Agency																		10,752
Own Fund																		
Investment from Govt.																		
Total Revenue by each year		2,358	2,316	2,273	3,099	3,051	3,002	3,573	3,519	3,462	4,071	4,009	3,944	4,645	4,574	4,501	5,307	99,240
Inflation of Expenditure		4.67	4.88	5.10	5.33	5.57	5.82	6.08	6.35	6.64	6.94	7.25	7.57	7.92	8.27	8.64	9.03	
Constructing Expense																		9,828
Interest during Construction																		
Payment for Loan from Financial Agency		652	652	186	186													34,216
Repayment for Principal	Debt F 1.00	512	563	154	169													10,752
- Public Agency		512	563	154	169													10,752
- Private Agency																		
Payment for Interest (a)		140	89	32	17													23,464
- Public Agency	10.00% per year	140	89	32	17													23,464
- Private Agency																		
Management		79	80	81	82	83	84	94	95	97	98	100	101	103	105	107	108	3,229
Managing cost	20% of Rental Fee	56	56	56	56	56	56	65	65	65	65	65	65	65	65	65	65	2,337
Land Rent	B 14 / wah2 / month	22.6	23.6	24.7	25.8	26.9	28.1	29.4	30.7	32.1	33.6	35.1	36.6	38.3	40.0	41.8	43.7	892
Tax																		
- Transfer Fee																		
- Local Improvement Tax : under calculation																		
Total Expenditure		731	732	267	268	83	84	94	95	97	98	100	101	103	105	107	108	48,196
Investment																		-10,752
Expenditure		-731	-732	-267	-268	-83	-84	-94	-95	-97	-98	-100	-101	-103	-105	-107	-108	-48,196
Income		2,358	2,316	2,273	4,082	3,051	3,002	3,573	3,519	3,462	4,071	4,009	3,944	4,645	4,574	4,501	5,307	100,223
Cash Flow		1,627	1,584	2,005	3,813	2,968	2,917	3,479	3,423	3,365	3,973	3,909	3,843	4,542	4,470	4,394	5,199	41,275
Accumulated Cash Flow		-12,609	-11,025	-9,019	-5,206	-2,238	679	4,158	7,581	10,946	14,918	18,828	22,670	27,212	31,682	36,076	41,275	



Cash Flow Analysis of the Commercial Development by Private Sector

Cash flow of Private Sector; Base Case, Case 1, Case 2, and Case 5

Initial Cost							
- Land	Area	71.200	M2				
	Price of Lease Hold	71.110	baht / sq.m		5.063	million baht	49%
- Building	Commerce	200.000	M2		0	million baht	0%
	Apartment & Hotel	50.000	M2		0	million baht	0%
	Parking	104.167	M2		0	million baht	0%
	Total	354.167	M2	15.094Baht/M2	5.346	million baht	51%
	FAR	497	%				
Initial Cost Total					10.409	million baht	100%

Revenue						
- Building	Rental Floor Area	150.000	sq.m	42	%	(Net Rate)
	Occupancy Floor	142.500	sq.m	5,0	%	(Vacancy Rate
	Key Money	0	baht / sq.m	0	million baht	
	Rental Fee	800	baht / sq.m / month	1.368	million baht / year	
Revenue Total				1.368	million baht / year	

Expenditure					
- Floor Rent	Lease Fee		baht / sq.m / month	0	million baht / year
- Building	Managing Cost	20,0	% * Rental Fee	270	million baht / year
- Tax					million baht / year
Expenditure Total				270	million baht / year

The Internal Rate of Return of Private Sector		
	10 years : 5%	30 years : 17%
	15 years : 13%	40 years : 18%
	20 years : 16%	50 years : 18%

< The Long-term Revenue and Expenditure >

	Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	40	50
	(Price Rising Rate)	(1,00)	(1,00)	(1,00)	(1,00)	(1,15)	(1,15)	(1,15)	(1,32)	(1,32)	(1,32)	(1,75)	(2,31)	(2,66)	(3,52)	(5,35)	(9,36)
- Land	Key Money	0															
	Lease Fee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Building	Building Cost	5.346															
	Management Cost		270	270	270	311	311	311	357	357	357	472	625	718	950	1.445	2.527
- Tax			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Expense Total		5.346	819	805	790	817	804	791	824	812	801	870	1.001	1.116	1.436	1.445	2.527
- Building	Key Money		0														
	Rental Fee		1.368	1.368	1.368	1.573	1.573	1.573	1.809	1.809	1.809	2.393	3.164	3.639	4.812	7.319	12.801
Income Total			1.368	1.368	1.368	1.573	1.573	1.573	1.809	1.809	1.809	2.393	3.164	3.639	4.812	7.319	12.801
Cash Flow by each year		-5.346	549	563	578	756	770	783	985	997	1.008	1.523	2.163	2.523	3.376	5.875	10.275
By Private	51%	-5.346	282	289	297	388	395	402	506	512	518	782	1.111	1.296	1.734	3.017	5.277
By Government	49%	0	267	274	281	368	374	381	479	485	490	741	1.052	1.227	1.642	2.857	4.998
Accumulated Cash Flow		-5.346	-4.797	-4.234	-3.656	-2.900	-2.130	-1.348	-363	634	1.642	8.421	17.595	29.510	45.090	94.712	175.365

*The price is shown in millions

Cash Flow Analysis of the Commercial Development by Private Sector

Cash flow of Private Sector; Case 3 and Case 6

Initial Cost							
- Land	Area	71.200	M2				
	Price of Lease Hold	71.110	baht / sq.m		5.063	million baht	47%
- Building	Commerce	200.000	M2	16.771Baht/M2	3.354	million baht	31%
	Apartment & Hotel	50.000	M2	25.156Baht/M2	1.258	million baht	12%
	Parking	104.167	M2	9.783Baht/M2	1.019	million baht	10%
	Total	354.167	M2	15.900Baht/M2	5.631	million baht	53%
	FAR	497	%				
Initial Cost Total					10.694	million baht	100%

Revenue						
- Building	Rental Floor Area	150.000	sq.m	42	%	(Net Rate)
	Occupancy Floor	142.500	sq.m	5,0	%	(Vacancy Rate)
	Key Money	0	baht / sq.m	0	million baht	
	Rental Fee	800	baht / sq.m / month	1.368	million baht / year	
Revenue Total				1.368	million baht / year	

The Internal Rate of Return of Private Sector		
	10 years : -7%	30 years : 10%
	15 years : 3%	40 years : 12%
	20 years : 7%	50 years : 12%

Expenditure					
- Floor Rent	Lease Fee		baht / sq.m / month	0	million baht / year
- Building	Managing Cost	20,0	% * Rental Fee	270	million baht / year
- Tax					million baht / year
Expenditure Total				270	million baht / year

< The Long-term Revenue and Expenditure >

	Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	40	50
(Income Inflation)	15% every 3 year	(1,00)	(1,00)	(1,00)	(1,00)	(1,15)	(1,15)	(1,15)	(1,32)	(1,32)	(1,32)	(1,75)	(2,31)	(2,66)	(3,52)	(5,35)	(9,36)
(Expense Inflation)	4.5% every year	(1,00)	(1,05)	(1,09)	(1,14)	(1,19)	(1,25)	(1,30)	(1,36)	(1,42)	(1,49)	(1,85)	(2,31)	(2,88)	(3,58)	(5,57)	(8,64)
- Land	Key Money	0															
	Lease Fee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Building	Building Cost	5.631															
	Management Cost		282	295	308	322	336	352	367	384	401	500	623	777	968	1.503	2.334
- Tax			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Loan	Interest 5,0%	0	366	366	366	366	366	366	366	366	366	366	366	366	366	0	
Expense Total		5.631	648	661	674	688	703	718	734	750	768	866	989	1.143	1.334	1.503	2.334
- Building	Key Money		0														
	Rental Fee		1.368	1.368	1.368	1.573	1.573	1.573	1.809	1.809	1.809	2.393	3.164	3.639	4.812	7.319	12.801
Income Total			958	958	958	1.101	1.101	1.101	1.266	1.266	1.266	1.675	2.215	2.547	3.369	5.123	8.961
Cash Flow by each year		-5.631	309	296	283	413	398	383	533	516	499	809	1.226	1.404	2.035	3.621	6.627
Accumulated Cash Flow		-5.631	-5.322	-5.026	-4.742	-4.329	-3.931	-3.548	-3.015	-2.499	-2.000	1.594	6.571	13.249	22.504	53.438	104.480

*The price is shown in millions

Cash Flow Analysis of the Commercial Development by Private Sector

Cash flow of Private Sector; Case 4 (Increasing Loan Interest Rate)

Initial Cost							
- Land	Area	71.200	M2				
	Price of Lease Hold	71.110	baht / sq.m		5.063	million baht	47%
- Building	Commerce	200.000	M2	16.771Baht/M2	3.354	million baht	31%
	Apartment & Hotel	50.000	M2	25.156Baht/M2	1.258	million baht	12%
	Parking	104.167	M2	9.783Baht/M2	1.019	million baht	10%
	Total	354.167	M2	15.900Baht/M2	5.631	million baht	53%
	FAR	497	%				
Initial Cost Total					10.694	million baht	100%

Revenue						
- Building	Rental Floor Area	150.000	sq.m	42	%	(Net Rate)
	Occupancy Floor	142.500	sq.m	5,0	%	(Vacancy Rate)
	Key Money	0	baht / sq.m	0	million baht	
	Rental Fee	800	baht / sq.m / month	1.368	million baht / year	
Revenue Total				1.368	million baht / year	

The Internal Rate of Return of Private Sector		
	10 years : 1%	30 years : 15%
	15 years : 9%	40 years : 15%
	20 years : 13%	50 years : 16%

Expenditure					
- Floor Rent	Lease Fee		baht / sq.m / month	0	million baht / year
- Building	Managing Cost	20,0	% * Rental Fee	270	million baht / year
- Tax					million baht / year
Expenditure Total				270	million baht / year

< The Long-term Revenue and Expenditure >

	Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	40	50
(Income Inflation)	15% every 3 year	(1,00)	(1,00)	(1,00)	(1,00)	(1,15)	(1,15)	(1,15)	(1,32)	(1,32)	(1,32)	(1,75)	(2,31)	(2,66)	(3,52)	(5,35)	(9,36)
(Expense Inflation)	4.5% every year	(1,00)	(1,05)	(1,09)	(1,14)	(1,19)	(1,25)	(1,30)	(1,36)	(1,42)	(1,49)	(1,85)	(2,31)	(2,88)	(3,58)	(5,57)	(8,64)
- Land	Key Money	0															
	Lease Fee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Building	Building Cost	5.631															
	Management Cost		282	295	308	322	336	352	367	384	401	500	623	777	968	1.503	2.334
- Tax			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Loan	Interest 10,0%	0	597	597	597	597	597	597	597	597	597	597	597	597	597	0	
Expense Total		5.631	879	892	905	919	934	949	965	981	999	1.097	1.220	1.374	1.565	1.503	2.334
- Building	Key Money		0														
	Rental Fee		1.368	1.368	1.368	1.573	1.573	1.573	1.809	1.809	1.809	2.393	3.164	3.639	4.812	7.319	12.801
Income Total			1.368	1.368	1.368	1.573	1.573	1.573	1.809	1.809	1.809	2.393	3.164	3.639	4.812	7.319	12.801
Cash Flow by each year		-5.631	489	476	463	654	639	624	844	828	811	1.295	1.944	2.265	3.247	5.816	10.467
Accumulated Cash Flow		-5.631	-5.143	-4.667	-4.204	-3.550	-2.911	-2.287	-1.442	-614	196	5.942	13.909	24.605	39.358	88.801	169.989

*The price is shown in millions

APPENDIX-12:
CALCULATION SHEET FOR INFRASTRUCTURE

A12.1 CONDITIONS FOR PLANNING

According to the planned scheme in Part III, population and floor area of the Din Daeng Community Area has been set for planning of infrastructure, as presented in the following tables.

Floor Area and Population before the Project

Zone	User	Land Use	Floor Area (m2)	Units (units)	Residents (persons)	Floor Area by Use		Population	
						Use	Floor Area		
1,1	NHA	Office	1666			Office (NHA)	1666	58	Staffs
1,2	NHA	Residential	111354	1776	5914	Residential	111354	5914	Residents
1,3	NHA	Residential	43776	672	2238	Residential	43776	2238	Residents
1,4	NHA	Residential	43776	672	2238	Residential	43776	2238	Residents
1,5	NHA	Residential	45000	640	2131	Residential	45000	2131	Residents
1,6	NHA	Residential	23336	384	1279	Residential	23336	1279	Residents
1,7	NHA	Residential	45280	900	2997	Residential	45280	2997	Residents
1,8	NHA	Residential	22640	450	1499	Residential	22640	1499	Residents
1,9	NHA	Residential	15000	352	1172	Residential	15000	1172	Residents
1,10	NHA	Commercial&Residential	18790	664	2211	Commercial&Residential	18790	2211	Residents
1,11	NHA	Residential	38800	972	3237	Residential	38800	3237	Residents
1,12	NHA	Residential	27487	308	1026	Residential	27487	1026	Residents
1,13	NHA	Commercial&Residential	89244	952	3170	Commercial&Residential	89244	3170	Residents
1,14	NHA	Commercial&Residential	31130	270	899	Commercial&Residential	31130	899	Residents
S-total			**557279**	**9012**	**30011**				
2,1	BMA	Office	73754			Office (City Hall &District)	73754	14804	Staffs
2,2	BMA	Office	15626			Office (Mech. Div)	15626	370	Staffs
2,3	BMA	School	6878			School (Wichakhon)	6878	300	Kindergarden
								780	Elementary
								154	Staffs
2,4	BMA	Sport Facilities	4168			Gymnasium	4168	9000	Visitors(capacity)
						Office		108	Staffs
2,5	BMA	Sport Facilities	62678			Outdoor Stadium		6400	Visitors(capacity)
						Indoor Stadium		9000	Visitors(capacity)
						Swim. Pool		800	Visitors(capacity)
						Meeting Room		214	Visitors(capacity)
						Others		500	Visitors(capacity)
						Watering			
						Office		106	Staffs
2,6	BMA	Office	6351			Office (DTPC)	6351	1042	Staffs
2,7	BMA	Office	1206			Office (Rabies Div.)	1206	130	Staffs
2,8	BMA	Park	102			Park	102	20	Staffs
2,9	BMA	Other (Gas Station & Mech Workshop)	715			Gass Station & Mech Workshop	715	743	Staffs
2,10	BMA	Office	4319			Office (Const. Center)	4319	1474	Staffs
2,11	BMA	Other(Workshop & Plant)				Plant	0	56	Staffs
2,12	BMA	Other(Workshop & Plant)				Plant	0	56	Staffs
2,13	BMA	Office	2021			Office (Health Source Center)	2021	60	Staffs
2,14	BMA	School	5582			School (Vocational Center)	5582	1643	Students
2,15	BMA	School	13966			School (Wichutit)	13966	360	Kindergarden
								1350	Elementary
								360	Secondary
								153	Staffs
2,16	BMA	Office	1757			Office (Analysis&Research)	1757	74	Staffs
S-total			**199123**						
3,1	MOL	Office	12187			Office	12187	1926	Staffs
3,2	MOL	Public Service	4110			Office (Care Center)	4110	650	Staffs
3,3	MOL	Office	1460			Office	1460	231	Staffs
3,4	MOL	Office				Office	628	99	Staffs
3,5	MOL	Public Service	676			Office (Day Care Center)	676	107	Staffs
S-total			**18433**						

Floor Area and Population before the Project (Continued)

Zone	User	Land Use	Floor Area (m2)	Units (units)	Residents (persons)	Floor Area by Use: Use	Floor Area by Use: Floor Area	Population	
4,1	BMA	Office	6559			Office	6559	1317	**5,0m2/staff**
S-total			**6559**						
5,1	MOE	School	18854			School (Pibulprachasan)	18854	450	Kindergarden
								1575	Elementary
								810	Lower Secondary
								405	Upper Secondary
						Office		163	Staffs
5,2	MOE	School	1067			School (Samakeebumrun)		270	Elementary
S-total			**19921**						
6,1	MOH	Hospital	21054			Hospital	21054	610	beds
						Office		511	Staffs
S-total			**21054**						
7,1	OPM	Other (Office)				Police Station	500	224	Staffs
8,1	OTHER	Religious	870			Mosque	870	87	Visitors
Total			**823239**		**30011**				

Floor Area and Population after the Project

Zone	Block No.	User	Land Use	Total Floor Area (m2)	Units (units)	Population (persons)	Floor Area by Use: Use	Floor Area by Use: Floor Area	Population	
A	1,1	NHA	Commerce&Residence	67893	651	2213	Housing C1	43062	2213	Residents
							Public Service	8691	0	-
							Commercial	3770	251	15m2/staff
							Commercial	3770	918	Customers
							Parking	12370	399	cars
A	1,2	NHA	Commerce&Residence	34360	740	2516	Housing C1	33600	2516	Residents
							Commercial	760	51	15m2/staff
							Commercial	760	185	Customers
A	1,20	NHA	Commerce&Residence	100400	952	3237	Housing	78088	3237	Residents
							Commercial	11156	744	15m2/staff
							Commercial	11156	2717	Custormrs
A	1,21	NHA	Park							
B	1,4	NHA	Commerce&Residence	354167	544	1850	Housing	50000	1850	Residents
							Commercial	200000	13333	15m2/staff
							Commercial	200000	48710	Customers
							Parking	104167	2976	Cars
C	1,5	NHA	Residence	110763	1228	4175	Housing C1	76705	4175	Residents
							Public Service	14003	0	-
							Commercial	6145	410	15m2/staff
							Commercial	6145	1497	Custormrs
							Parking	13910	599	Cars
C	1,13	NHA	Residence	27487	308	1047	Residence	27487	1047	Residents
C	2,11	BMA	School (Wichakhon)	13966			School (Wichakhon)	13966	324	Kindergarden
									706	Elementary
									721	Secondary
									154	Staffs
C	2,12	BMA	School (Wichutiti)	5582			School (Wichutiti)	5582	242	Kindergarden
									1350	Elementary
									360	Secondary
									153	Staffs
C	2,13	BMA	Office	2012			Office (Health Source Center)	2012	60	Staffs
C	2,14	BMA	other (Plant)	17134			other (Plant)	17134	56	Staffs
C	5,2	MOE	School (Samakeebmrun)	1067			School (Samakeebmrun)	1067	270	Kindergarden
D	1,14	NHA	Park				Park	0	0	Staffs
D	1,6	NHA	Residence	163380	1488	5059	Housing C1	124260	5059	Residents
							Parking	39120	1420	cars
D	8,1	OTHER	Mosque	870			Mosque	870	87	Visitors
E	1,7	NHA	Residence	5625	80	272	Housing	5625	272	Residents
E	1,8	NHA	Residence	16875	240	816	Housing	16875	816	Residents
E	1,9	NHA	Residence	22500	320	1088	Housing	22500	1088	Residents
F	1,10	NHA	Residence	69930	1242	4223	Housing	69930	4223	Residents
F	2,3	BMA	Office	4319			Office (Construction Center)	4319	1474	Staffs
F	2,4	BMA	Other (Gas Station)	715			Other (Gas Station)	715	20	Staffs
F	2,15	BMA	Other (Plant)	12156			Other (Plant)	12156	56	Staffs
F	7,1	OPM	Other (Office)	500			Office (Police)	500	224	Staffs
G	2,1	BMA	Office	474610			Office	358599	27154	13m2/staff
							Parking	116011	2300	Cars
G	2,2	BMA	Office	63990			Office	63990	4846	13m2/staff

Floor Area and Population after the Project (Continued)

Zone	Block No.	User	Land Use	Total Floor Area (m2)	Units (units)	Population (persons)	Floor Area by Use: Use	Floor Area by Use: Floor Area	Population	
G	2,5	BMA	Park				-	0	9	Staffs
H	2,6	BMA	Public Facilities (Station)				Public Facilities (Station)	-	-	Passengers
H	2,7	BMA	Public Facilities (Bus Terminal)				Public Facilities (Bus Terminal)	-	-	Passengers
H	1,12	NHA	Park				Park	-	-	Visitors
H	1,11	NHA	Public Service	18640			Public Service	18640	-	13m2/staff
I	2,8	BMA	Stadium	20998			Stadium	20998	6400	Outdoor Stadium
									9000	Indoor Stadium
									800	Swim. Pool
									214	Meeting Room
									500	Others
									106	Staffs
I	2,9	BMA	School (Vocational)	8940			School (Vocational)	8940	1693	Students
I	2,10	BMA	Gymnasium	18000			Gymnasium	18000	9000	Visitors
									108	Staffs
J	3,1	BMA	Office	12187			Office	12187	923	13m2/staff
J	3,2	BMA	Office	4410			Office	4410	334	13m2/staff
J	3,5	BMA	Public Service	676			Public Service	676	51	13m2/staff
J	5,1	MOE	School (Pibulprachasan)	18854			School (Pibulprachasan)	18854	50	Kindergarden
									50	Elementary
									50	Lower Secondary
									80	Upper Secondary
							Office		163	Staffs
K	6,1	MOH	Hospital	21054			Hospital (Ratchanukun)	21054	610	beds
									511	Staffs(office)
K	1,3	NHA	Commerce&Residence	37427	304	1034	Housing C1	18145	1034	Residents
							Public Service	5865	0	-
							Commercial	4816	321	15m2/staff
							Commercial	4816	1173	Customers
							Parking	8601	244	Cars
L	1,15	NHA	Commerce&Residence	5637	133	452	Residence	4502	452	Residents
							Commercial	1135		
L	1,16	NHA	Commerce&Residence	7516	266	903	Residence	6016	903	Residents
							Commercial	1500		
L	1,17	NHA	Commerce&Residence	1879	66	226	Residence	1504	226	Residents
							Commercial	375		
L	3,4	MOL	Office				Office	-	99	Staffs
L	1,18	NHA	Commerce&Residence	1879	66	226	Residence	1504	226	Residents
							Commercial	375		
L	1,19	NHA	Commerce&Residence	3758	133	452	Residence	3001	452	Residents
							Commercial	757		
Total				1752156	8761	29789				

A12.2 WATER SUPPLY SYSTEM

(1) Unit Daily Water Demand

Water demand projection has adopted unit water demands of MWA's master plan for water supply in 1990 and Data Book for Building Design in Japan to supplement the former unit demand, as presented in the following tables.

Unit Daily Water Demand in the Master Plan by MWA in 1990

Category	Unit Daily Water Demand (litter/consumer/day)					
	1997 (planned)	2001*1 (assumption)	2007 (planned)	2011*1 (assumption)	2015*1 (assumption)	2017 (planned)
Residential	246	247	249	252	255	256
Non-residential	128	127	125	123	121	120
Total	374	374	374	375	376	376

Source: Master Plan for the Water Supply by MWA in 1990
Note: Water demands in 2001, 2011, and 2015 are assumed from the increasing ratio between the years before and after the assumed years.

Unit Daily Water Demand in Japan

Building Use	Unit Daily Water Demand (litter/consumer/day)	Note
Department Store	3	For one visitor
School (Ele & J.H.)	50	For one student
School (H. & U.)	80	For one student
Parking yard	3	For one passenger

Source: Data Book for Building Design , 1994

(2) Water Demand Projection of the Study Area

Water demand of the Study Area in 2015 has been estimated 102,260 m^3/day which is smaller than the demand of 93,196 m^3/day in 1990 due to decrease of population.

Therefore the capacity of existing trunk pipelines with diameters more than 600mm is sufficient to supply the water in 2015, which are located along Ratchadaphisek Road, Pracha Songhlo Road, Viphawadee Rangsit Road, and Pracha Songkhlor Road.

Water Demand Projection of the Study Area

Year	Unit Daily Water Demand per Capita			Water Demand with Redevelopment		
	Residential (lpcd)	Non-residential (lpcd)	Total (lpcd)	Population in DC Area (1,000pop.)	Daily Water Demand (m3/day)	Max. Daily Water Demand (m3/day)
1990	228	137	365	255,200	93,195,9	102,515.5
2000	247	127	374	228,909	85,609,4	94,170.3
2005	248	126	374	234,000	87,514,0	96,265.4
2011	247	127	375	242,200	90,718,0	99,789.8
2015	258	119	377	246,800	92,964,0	102,260.4

(3) Water Demand Projection of the Din Daeng Community Area

The daily water demand will increase from 11,532 m^3/day in 2001 to 14,815 m^3/day in 2011. However, this increase will not cause the improvement of the trunk pipeline, because capacity of the trunk pipelines more than 600mm covering the Study Area is enough for the demand in 2015, as discussed in the previous section.

Regarding the main distribution pipelines of 300mm covering the Din Daeng Community Area, those pipelines have three connection points with the trunk pipelines. Based on the conditions according to the MWA's master plan listed below, the maximum inflow of those main pipelines is estimated 0.318 m^3/s exceeding the maximum demand of 0.283 m^3/s.

- Max. daily water demand = Avg. daily water demand $\times$ 1.1
- Max. hourly water demand = Max. daily water demand $\div$ 24 $\times$ 1.5
- Max. flow velocity = 1.5 m/s for distribution pipeline, less than ϕ 400 mm

Thus, the existing main distribution pipelines can be used for water supply in 2011.

Pipes to be replaced are 150mm PVC lines along both side of Road M-4, due to the expansion of road width.

Water Demand Projection of the Din Daeng Community Area in 2001

Zone	User	Floor Area by Use		Population		Unit Water Consumption		Water
		Use	Floor Area				Use	Consumption
1,1	NHA	Office (NHA)	1666	58	Staffs	**127l/p/day**	**Non-residential**	7m3/day
1,2	NHA	Residential	111354	5914	Residents	**247l/p/day**	**Residential**	1.461m3/day
1,3	NHA	Residential	43776	2238	Residents	247l/p/day	Residential	553m3/day
1,4	NHA	Residential	43776	2238	Residents	247l/p/day	Residential	553m3/day
1,5	NHA	Residential	45000	2131	Residents	247l/p/day	Residential	526m3/day
1,6	NHA	Residential	23336	1279	Residents	247l/p/day	Residential	316m3/day
1,7	NHA	Residential	45280	2997	Residents	247l/p/day	Residential	740m3/day
1,8	NHA	Residential	22640	1499	Residents	247l/p/day	Residential	370m3/day
1,9	NHA	Residential	15000	1172	Residents	247l/p/day	Residential	289m3/day
1,10	NHA	Commercial&Residential	18790	2211	Residents	247l/p/day	Residential	546m3/day
1,11	NHA	Residential	38800	3237	Residents	247l/p/day	Residential	800m3/day
1,12	NHA	Residential	27487	1026	Residents	247l/p/day	Residential	253m3/day
1,13	NHA	Commercial&Residential	89244	3170	Residents	247l/p/day	Residential	783m3/day
1,14	NHA	Commercial&Residential	31130	899	Residents	247l/p/day	Residential	222m3/day
S-total								**7.420m3/day**
2,1	BMA	Office (City Hall &District)	73754	14804	Staffs	127l/p/day	Non-residential	1.880m3/day
2,2	BMA	Office (Mech. Div)	15626	370	Staffs	127l/p/day	Non-residential	47m3/day
2,3	BMA	School (Wichakhon)	6878	300	Kindergarden	**50l/p/day**	**School (Ele&JH)**	15m3/day
				780	Elementary	50l/p/day	School (Ele&JH)	39m3/day
				154	Staffs	127l/p/day	Non-residential	20m3/day
2,4	BMA	Gymnasium	4168	9000	Visitors(capacity)	-	-	40m3/day
		Office		108	Staffs			
2,5	BMA	Outdoor Stadium		6400	Visitors(capacity)	-	-	50m3/day
		Indoor Stadium		9000	Visitors(capacity)	-	-	40m3/day
		Swim. Pool		800	Visitors(capacity)	-	-	130m3/day
		Meeting Room		214	Visitors(capacity)	-	-	30m3/day
		Others		500	Visitors(capacity)	-	-	80m3/day
		Watering				-	-	20m3/day
		Office		106	Staffs			
2,6	BMA	Office (DTPC)	6351	1042	Staffs	127l/p/day	Non-residential	132m3/day
2,7	BMA	Office (Rabies Div.)	1206	130	Staffs	127l/p/day	Non-residential	17m3/day
2,8	BMA	Park	102	20	Staffs	127l/p/day	Non-residential	3m3/day
2,9	BMA	Gass Station & Mech Workshop	715	743	Staffs	127l/p/day	Non-residential	94m3/day
2,10	BMA	Office (Const. Center)	4319	1474	Staffs	127l/p/day	Non-residential	187m3/day
2,11	BMA	Plant	0	56	Staffs	127l/p/day	Non-residential	7m3/day
2,12	BMA	Plant	0	56	Staffs	127l/p/day	Non-residential	7m3/day
2,13	BMA	Office (Health Source Center)	2021	60	Staffs	127l/p/day	Non-residential	8m3/day
2,14	BMA	School (Vocational Center)	5582	1643	Students	80l/p/day	School (H&U)	131m3/day
2,15	BMA	School (Wichutit)	13966	360	Kindergarden	50l/p/day	School (Ele&JH)	18m3/day
				1350	Elementary	50l/p/day	School (Ele&JH)	68m3/day
				360	Secondary	50l/p/day	School (Ele&JH)	18m3/day
				153	Staffs	127l/p/day	Non-residential	19m3/day
2,16	BMA	Office (Analysis&Research)	1757	74	Staffs	127l/p/day	Non-residential	9m3/day
S-total								**3.109m3/day**
3,1	MOL	Office	12187	1926	Staffs	127l/p/day	Non-residential	245m3/day
3,2	MOL	Office (Care Center)	4110	650	Staffs	127l/p/day	Non-residential	83m3/day
3,3	MOL	Office	1460	231	Staffs	127l/p/day	Non-residential	29m3/day
3,4	MOL	Office	628	99	Staffs	127l/p/day	Non-residential	13m3/day
3,5	MOL	Office (Day Care Center)	676	107	Staffs	127l/p/day	Non-residential	14m3/day
S-total								**383m3/day**
4,1	BMA	Office	6559	1317	5,0m2/staff	127l/p/day	Non-residential	167m3/day
S-total								**167m3/day**
5,1	MOE	School (Pibulprachasan)	18854	450	Kindergarden	50l/p/day	School (Ele&JH)	23m3/day
				1575	Elementary	50l/p/day	School (Ele&JH)	79m3/day
				810	Lower Secondary	50l/p/day	School (Ele&JH)	41m3/day
				405	Upper Secondary	80l/p/day	School (H&U)	32m3/day
		Office		163	Staffs	127l/p/day	Non-residential	21m3/day
5,2	MOE	School (Samakeebumrun)		270	Elementary	50l/p/day	School (Ele&JH)	14m3/day
S-total								**208m3/day**
6,1	MOH	Hospital	21054	610	beds	247l/p/day	Residential	151m3/day
		Office		511	Staffs	127l/p/day	Non-residential	65m3/day
S-total								**216m3/day**
7,1	OPM	Police Station	500	224	Staffs	127l/p/day	Non-residential	28m3/day
8,1	OTHER	Mosque	870	87	Visitors	3l/p/day	Terminal	0m3/day
Total								**11.532m^3/day**

Water Demand Projection of the Din Daeng Community Area after the Project

Zone	Block No.	User	Floor Area by Use		Population		Unit Consumption		Water
			Use	Floor Area		Note			Consumption
A	1,1	NHA	Housing C1	43062	2213	Residents	252l/p/day	Residential	557m3/day
			Public Service	8691	0	-	123l/p/day	Non-residential	0m3/day
			Commercial	3770	251	15m2/staff	123l/p/day	Non-residential	31m3/day
			Commercial	3770	918	Customers	3l/p/day	Dept. Store (JPN)	3m3/day
			Parking	12370	399	cars	3l/c/day	Parking (JPN)	1m3/day
A	1,2	NHA	Housing C1	33600	2516	Residents	252l/p/day	Residential	633m3/day
			Commercial	760	51	15m2/staff	123l/p/day	Non-residential	6m3/day
			Commercial	760	185	Customers	3l/p/day	Dept. Store (JPN)	1m3/day
A	1,20	NHA	Housing	78088	3237	Residents	252l/p/day	Residential	815m3/day
			Commercial	11156	744	15m2/staff	123l/p/day	Non-residential	91m3/day
			Commercial	11156	2717	Custormrs	3l/p/day	Dept. Store (JPN)	8m3/day
A	1,21	NHA					3l/p/day	Parking (JPN)	0m3/day
B	1,4	NHA	Housing	50000	1850	Residents	252l/p/day	Residential	466m3/day
			Commercial	200000	13333	15m2/staff	123l/p/day	Non-residential	1.640m3/day
			Commercial	200000	48710	Customers	3l/p/day	Dept. Store (JPN)	146m3/day
			Parking	104167	2976	Cars	3l/p/day	Parking (JPN)	9m3/day
C	1,5	NHA	Housing C1	76705	4175	Residents	252l/p/day	Residential	1.051m3/day
			Public Service	14003	0	-	123l/p/day	Non-residential	0m3/day
			Commercial	6145	410	15m2/staff	123l/p/day	Non-residential	50m3/day
			Commercial	6145	1497	Custormrs	3l/p/day	Dept. Store (JPN)	4m3/day
			Parking	13910	599	Cars	3l/p/day	Parking (JPN)	2m3/day
C	1,13	NHA	Residence	27487	1047	Residents	252l/p/day	Residential	264m3/day
C	2,11	BMA	School (Wichakhon)	13966	324	Kindergarden	50l/p/day	School (Ele&JH)(JPN)	16m3/day
					706	Elementary	50l/p/day	School (Ele&JH)(JPN)	35m3/day
					721	Secondary	50l/p/day	School (Ele&JH)(JPN)	36m3/day
					154	Staffs	123l/p/day	Non-residential	19m3/day
C	2,12	BMA	School (Wichutiti)	5582	242	Kindergarden	50l/p/day	School (Ele&JH)(JPN)	12m3/day
					1350	Elementary	50l/p/day	School (Ele&JH)(JPN)	68m3/day
					360	Secondary	50l/p/day	School (Ele&JH)(JPN)	18m3/day
					153	Staffs	123l/p/day	Non-residential	19m3/day
C	2,13	BMA	Office (Health Source Center)	2012	60	Staffs	123l/p/day	Non-residential	7m3/day
C	2,14	BMA	other (Plant)	17134	56	Staffs	123l/p/day	Non-residential	7m3/day
C	5,2	MOE	School (Samakeebmrun)	1067	270	Kindergarden	50l/p/day	School (Ele&JH)(JPN)	14m3/day
D	1,14	NHA	Park	0	0	Staffs	123l/p/day	Non-residential	0m3/day
D	1,6	NHA	Housing C1	124260	5059	Residents	252l/p/day	Residential	1.274m3/day
			Parking	39120	1420	cars	3l/p/day	Parking (JPN)	4m3/day
D	8,1	OTHER	Mosque	870	87	Visitors	3l/p/day	Terminal	0m3/day
E	1,7	NHA	Housing	5625	272	Residents	252l/p/day	Residential	68m3/day
E	1,8	NHA	Housing	16875	816	Residents	252l/p/day	Residential	205m3/day
E	1,9	NHA	Housing	22500	1088	Residents	252l/p/day	Residential	274m3/day
F	1,10	NHA	Housing	69930	4223	Residents	252l/p/day	Residential	1.063m3/day
F	2,3	BMA	Office (Construction Center)	4319	1474	Staffs	123l/p/day	Non-residential	181m3/day
F	2,4	BMA	Other (Gas Station)	715	20	Staffs	123l/p/day	Non-residential	2m3/day
F	2,15	BMA	Other (Plant)	12156	56	Staffs	123l/p/day	Non-residential	7m3/day
F	7,1	OPM	Office (Police)	500	224	Staffs	123l/p/day	Non-residential	28m3/day
G	2,1	BMA	Office	358599	27154	13m2/staff	123l/p/day	Non-residential	3.339m3/day
			Parking	116011	2300	Cars			
G	2,2	BMA	Office	63990	4846	13m2/staff	123l/p/day	Non-residential	596m3/day
G	2,5	BMA	-	0	9	Staffs	123l/p/day	Non-residential	1m3/day
H	2,6	BMA	Public Facilities (Station)	-	-	Passengers	3l/p/day	Terminal	-
H	2,7	BMA	Public Facilities (Bus Terminal)	-	-	Passengers	3l/p/day	Terminal	-
H	1,12	NHA	Park	-	-	Visitors	3l/p/day	Dept. Store (JPN)	-
H	1,11	NHA	Public Service	18640	-	13m2/staff	123l/p/day	Non-residential	-
I	2,8	BMA	Stadium	20998	6400	Outdoor Stadium	-	-	50m3/day
					9000	Indoor Stadium	-	-	40m3/day
					800	Swim. Pool	-	-	130m3/day
					214	Meeting Room	-	-	30m3/day
					500	Others	-	-	80m3/day
						Watering	-	-	20m3/day

Water Demand Projection of the Din Daeng Community Area after the Project

Zone	Block No.	User	Floor Area by Use		Population		Unit Consumption		Water Consumption
			Use	Floor Area		Note			
I	2,9	BMA	School (Vocational)	8940	1693	Students	80l/p/day	School (H&U)(JPN)	135m3/day
I	2,10	BMA	Gymnasium	18000	9000	Visitors	-	-	40m3/day
					108	Staffs			
J	3,1	BMA	Office	12187	923	13m2/staff	123l/p/day	Non-residential	113m3/day
J	3,2	BMA	Office	4410	334	13m2/staff	123l/p/day	Non-residential	41m3/day
J	3,5	BMA	Public Service	676	51	13m2/staff	123l/p/day	Non-residential	6m3/day
J	5,1	MOE	School (Pibulprachasan)	18854	50	Kindergarden	50l/p/day	School (Ele&JH)(JPN)	3m3/day
					50	Elementary	50l/p/day	School (Ele&JH)(JPN)	3m3/day
					50	Lower Secondary	50l/p/day	School (Ele&JH)(JPN)	3m3/day
					80	Upper Secondary	80l/p/day	School (H&U)(JPN)	6m3/day
			Office		163	Staffs	121l/p/day	Residential	20m3/day
K	6,1	MOH	Hospital (Ratchanukun)	21054	610	beds	121l/p/day	Residential	74m3/day
					511	Staffs(office)	123l/p/day	Non-residential	63m3/day
K	1,3	NHA	Housing C1	18145	1034	Residents	252l/p/day	Residential	260m3/day
			Public Service	5865	0	-	123l/p/day	Non-residential	0m3/day
			Commercial	4816	321	15m2/staff	123l/p/day	Non-residential	39m3/day
			Commercial	4816	1173	Customers	3l/p/day	Dept. Store (JPN)	4m3/day
			Parking	8601	244	Cars	3l/p/day	Parking (JPN)	1m3/day
L	1,15	NHA	Residence	4502	452	Residents	252l/p/day	Residential	114m3/day
			Commercial	1135					
L	1,16	NHA	Residence	6016	903	Residents	252l/p/day	Residential	227m3/day
			Commercial	1500					
L	1,17	NHA	Residence	1504	226	Residents	252l/p/day	Residential	57m3/day
			Commercial	375					
L	3,4	MOL	Office	-	99	Staffs	123l/p/day	Non-residential	12m3/day
L	1,18	NHA	Residence	1504	226	Residents	252l/p/day	Residential	57m3/day
			Commercial	375					
L	1,19	NHA	Residence	3001	452	Residents	252l/p/day	Residential	114m3/day
			Commercial	757					
Total									14.815m3/day

A12.3 SEWAGE TREATMENT SYSTEM

(1) Wastewater Volume of the Study Area and the Din Daeng Community Area

Wastewater volume was assumed as 100 % of the supplied drinking water. Therefore average daily wastewater volume of the Study Area is 102,260 m^3/day, which can be received by the Din Daeng Central Wastewater Treatment Plant, due to the decrease of the water demand in 2015. Further the daily wastewater volume of the Din Daeng Community Area in 2011 has been estimated 14,815 m^3/day

(2) Planning Conditions

Sewage collection system of the Din Daeng Community Area has adopted the separate system to minimize the BOD load to khlongs. Location of the collection system has examined the following conditions.

- Minimizing the reconstruction of road, collection pipes along the existing

roads are connected with blocks at points. Collected wastewater flows down to main sewage pipes along Road S-1.

- Collection pipes are located under pedestrian ways to be expanded for adjustment with in-site pipes of blocks, if necessary.
- The facilities developed in the first and second phases are required to equip with temporary treatment plant to discharge treated water to the existing drainage, while the rest after the third phase discharges to the separate sewage collection system. Because the collection pipes along S-1 will be developed in parallel with S-1.

(3) Flow Capacity Calculation

The Study has examined flow capacity of the sewage collection pipes, based on the following conditions.

- Max. daily wastewater volume = 1.1×Avg. daily wastewater volume
- Max. hourly wastewater discharge = Max. daily wastewater volume÷24×1.5
- Average flow velocity = 0.7 m/s

Diameter of the pipes varies from 250 to 800 mm as presented in the table in the next page.

(4) Stream of Highly Treated Water

The Study has examined the stream of highly treated water discussed in Part II, according to the examples of Japan and available width along Pracha Songkhlo Road. The outline of the stream is presented in the table below.

Flow Capacity Calculation for Wastewater

Items	Description
Details of Stream	
Avg. width	1,2 m
Water depth	3 cm
Velocity	0,4 m/s
Avg. flow volume	0,86 m3/min
	1.244 m3/d
Share to Treated wastewater (Stage 2)	0,36 %

Flow Capacity Calculation for Wastewater

No. of pipe	Pipe No. (inflow)	Pipe No. (outflow)	Discharge (m3/s)	Accu. Discharge (m3/s)	Design Velocity (m/s)	Diameter (mm)	Diameter (raius,m)	Flow Area (m2)	Flow Capacity (m3/s)	Evaluation
S1	-	S2	0,0113	0,0113	0,7	250	0,13	0,049	0,034	OK
S2	S2	S5	0,0122	0,0235	0,7	250	0,13	0,049	0,034	OK
S3	-	S4	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
S4	S3	S5	0,0175	0,0175	0,7	250	0,13	0,049	0,034	OK
S5	S2, S4	S8	0,0000	0,0410	0,7	300	0,15	0,071	0,049	OK
S6	-	S8	0,0013	0,0013	0,7	250	0,13	0,049	0,034	OK
S7	-	S8	0,0052	0,0052	0,7	250	0,13	0,049	0,034	OK
S8	S6, S7	L4	0,0039	0,0105	0,7	250	0,13	0,049	0,034	OK
E1	-	E3	0,0043	0,0043	0,7	250	0,13	0,049	0,034	OK
E2	-	E3	0,0022	0,0022	0,7	250	0,13	0,049	0,034	OK
E3	E1, E2	L1	0,0000	0,0065	0,7	250	0,13	0,049	0,034	OK
E4	-	E5	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
E5	E4	E6	0,0213	0,0213	0,7	250	0,13	0,049	0,034	OK
E6	E5	I6	0,0001	0,0214	0,7	250	0,13	0,049	0,034	OK
E7	-	E9	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
E8	-	E9	0,0011	0,0011	0,7	250	0,13	0,049	0,034	OK
E9	E7, E8	U2	0,0002	0,0013	0,7	250	0,13	0,049	0,034	OK
L1	E3	L2	0,0058	0,0123	0,7	250	0,13	0,049	0,034	OK
L2	L1, S5	L3	0,0000	0,0533	0,7	350	0,18	0,096	0,067	OK
L3	L2	I1	0,0000	0,0533	0,7	350	0,18	0,096	0,067	OK
L4	S8	L5	0,0001	0,0106	0,7	250	0,13	0,049	0,034	OK
L5	L4	I1	0,0008	0,0114	0,7	250	0,13	0,049	0,034	OK
L6	-	L7	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
L7	L6	L10	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
L8	-	L9	0,0067	0,0067	0,7	250	0,13	0,049	0,034	OK
L9	L8	L10	0,0000	0,0067	0,7	250	0,13	0,049	0,034	OK
L10	L7, L9	L12	0,0244	0,0311	0,7	300	0,15	0,071	0,049	OK
L11	-	L12	0,0022	0,0022	0,7	250	0,13	0,049	0,034	OK
L12	L10, L11	L13	0,0000	0,0333	0,7	300	0,15	0,071	0,049	OK
L13	L12	I2	0,0000	0,0333	0,7	300	0,15	0,071	0,049	OK
M1	-	M2	0,0026	0,0026	0,7	250	0,13	0,049	0,034	OK
M2	M1	I3	0,0008	0,0034	0,7	250	0,13	0,049	0,034	OK
M3	-	I3	0,0432	0,0432	0,7	300	0,15	0,071	0,049	OK
U1	-	I4	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
U2	-	U3	0,0050	0,0050	0,7	250	0,13	0,049	0,034	OK
U3	U2, E9	U5	0,0003	0,0066	0,7	250	0,13	0,049	0,034	OK
U4	-	U5	0,0026	0,0026	0,7	250	0,13	0,049	0,034	OK
U5	U3, U4	I5	0,0017	0,0109	0,7	250	0,13	0,049	0,034	OK
U6	-	U7	0,0638	0,0638	0,7	350	0,18	0,096	0,067	OK
U7	U6	I6	0,0114	0,0752	0,7	400	0,20	0,126	0,088	OK
I1	L3, L5	I2	0,0000	0,0647	0,7	400	0,20	0,126	0,088	OK
I2	L13, I1	I3	0,0000	0,0980	0,7	500	0,25	0,196	0,137	OK
I3	M2, M3, I2	I4	0,0000	0,1445	0,7	600	0,30	0,283	0,198	OK
I4	U1, I3	I5	0,0000	0,1445	0,7	600	0,30	0,283	0,198	OK
I5	U5, I4	I6	0,0000	0,1553	0,7	600	0,30	0,283	0,198	OK
I6	U7, I5, E6	I7	0,0000	0,2519	0,7	800	0,40	0,503	0,352	OK
I7	N4, I6	Plant	0,0000	0,2763	0,7	800	0,40	0,503	0,352	OK
N1	-	N2	0,0000	0,0000	0,7	250	0,13	0,049	0,034	OK
N2	N1	N3	0,0035	0,0035	0,7	250	0,13	0,049	0,034	OK
N3	N2	N4	0,0203	0,0238	0,7	250	0,13	0,049	0,034	OK
N4	N3	I7	0,0005	0,0243	0,7	250	0,13	0,049	0,034	OK
TOTAL			0,27626	0,27626						

A12.4 STORM DRAINAGE SYSTEM

(1) Planning Conditions

According to the Master Plan of Flood Protection and Drainage Systems in the Eastern Sub-Urban Bangkok by BMA, design criteria are given as listed below.

- Return Period : 2 years
- Rainfall intensity formula : I [mm/hr]=5,690/(t[minute]+37)
- Runoff coefficient : 0.58
- Time of entry : 5 minutes
- Flow velocity in drainage pipes : 1.2m^3/s
- Existing Pumping Capacity : 39 m^3/s (14+9 m^3/s along Khlong Sam Saen, 2+6 m^3/s at the canal along Viphawadee Rangsit Road, 8 m^3/s along Khlong Huai Khwang.)

(2) Drainage System of the Study Area

The Study Area is involved in the Din Daeng Polder having the catchment area of 9.22km^2 with five pumps. Examining the pumping capacity, the storm water can remain 174,500 m^2 for the 2years return period, which can be converted into the water depth of 2cm.

Pumping Capacity and Inundation of the Din Daeng Polder

Time (min)	R. Intensity (mm/hr)	Discharge (m3/s/ha)	Acc. Discharge (m3)	Pump Capacity (m3/s)	Pump Out (m3)	Flooding (m)	Water Depth (m)
30	84,93	0,1368	227073,5	39,0	70200,0	156873,5	0,017
55	**61,85**	**0,0996**	**303176,0**	**39,0**	**128700,0**	**174476,0**	**0,019**
60	58,66	0,0945	313689,1	39,0	140400,0	173289,1	0,019
90	44,80	0,0722	359384,0	39,0	210600,0	148784,0	0,016
120	36,24	0,0584	387615,8	39,0	280800,0	106815,8	0,012
150	30,43	0,0490	406789,4	39,0	351000,0	55789,4	0,006
180	26,22	0,0422	420661,4	39,0	421200,0	-538,6	0,000

Though all storm water is pumped out three hours, the improvement of drainage system is required to formulate the optimal living environment by locating the retention facilities in the reconstructed blocks and/or expansion of the Makkassan Pond.

In case of the DC Area, NHA and BMA have land areas of 293,752m2 and 404,320 m2, respectively. In proportion of their land areas, the required retention

capacity is estimated 8,191.8 m^3 for a NHA portion, and 11,275 m^3 for BMA portion.

Dividing the required capacities by the redeveloped land areas of both organizations, the average water depth in-site comes out to be 9 cm in NHA's land and 8 cm in BMA's land. Those depths could be covered by multi-utilizing of parkings, and open spaces.

Retention Facilities in NHA's and BMA's Lands

Items		Capacity and Area	
Land Area of NHA		293752	m^2
Land Area of BMA		404320	m^2
Required Capacity of the DC Area		19467,07	m^3
Required Capacity of NHA		8191,84	m^3 (9cm in water depth)
A1.1	(14.584,00 m^2)	1.239,93	m^3
A1.2	(11.129,00 m^2)	946,19	m^3
C1.5	(23.524,00 m^2)	2.000,01	m^3
D1.6	(38.720,00 m^2)	3.291,97	m^3
H1.11	(8.395,00 m^2)	713,74	m^3
Required Capacity of BMA		11275,24	m^3 (8cm in water depth)
G2.1	(61.398,00 m^2)	5.151,29	m^3
G2.2	(72.991,00m^2)	6.123,94	m^3

(3) Drainage System of the Din Daeng Community Area

Planning of storm drainage system of the Din Daeng Community Area has been examined based on the following conditions.

- In order to utilize the existing drainage system, catchment areas of existing facilities along Pracha Songkhlo Road, Mitri Road, and Asoke-Din Daeng Road are adjusted to discharge the surface water within the capacity of those facilities.
- The rest of the storm water is collected by the drainage along Road S-1 and flows down to the pumping station in Block G2.5.

Flow capacity calculation is presented in the following table.

Flow Capacity of Drainage System

Sub-catchment Area I-1	C	A m2	A' m2	v m/s	L m	t2 minutes	t1 minutes	tc minutes	I mm/hr	Q m3/s	Pipe No.	D mm	A m2	Q m3/s	Evaluation
①	0,58	20801	21217,6	1,2	187,5	2,6	5	7,6	127,6	0,44	①	**700**	0,49	0,59	OK
②	0,58	42040	42881,5	1,2	343,75	4,8	7,6	12,4	115,2	0,80	②	**900**	0,81	0,97	OK
③	0,58	19676	20070,1	1,2	187,5	2,6	5	7,6	127,6	0,41	③	**600**	0,36	0,43	OK
④	0,58	14704	14997,8	1,2	343,75	4,8	5	9,8	121,6	0,29	④	**500**	0,25	0,30	OK
⑤	0,58	24970	25469,3	1,2	106,25	1,5	9,8	11,3	117,9	0,48	⑤	**700**	0,49	0,59	OK
⑥	0,58	10904	11121,8	1,2	106,25	1,5	5	6,5	130,9	0,23	⑥	**500**	0,25	0,30	OK
⑦	0,58	23545	24015,8	1,2	343,75	4,8	6,5	11,3	117,9	0,46	⑦	**700**	0,49	0,59	OK
⑧	0,58	4211	4294,9	1,2	106,25	1,5	5	6,5	130,9	0,09	⑧	**300**	0,09	0,11	OK
⑨	0,58	117290	119637,5	1,2	75	1,0	11,3	12,3	115,4	2,23	⑨	**1400**	1,96	2,35	OK
⑩	0,58	137147	139892,1	1,2	375	5,2	12,3	17,5	104,4	2,35	⑩	**1500**	2,25	2,70	OK
⑪	0,58	19334	19721,0	1,2	281,25	3,9	5	8,9	123,9	0,39	⑪	**600**	0,36	0,43	OK
⑫	0,58	20034	20435,0	1,2	87,5	1,2	8,9	10,1	120,8	0,40	⑫	**600**	0,36	0,43	OK
⑬	0,58	8728	8902,7	1,2	87,5	1,2	5	6,2	131,7	0,19	⑬	**400**	0,16	0,19	OK
⑭	0,58	165909	169229,9	1,2	16	0,2	17,5	17,7	104,0	2,83	⑭	**1600**	2,56	3,07	OK
I-2			0,0												
①	0,58	33635	34308,3	1,2	312,5	4,3	5,0	9,3	122,8	0,68	①	**800**	0,64	0,77	OK
②	0,58	7267	7412,5	1,2	187,5	2,6	5	7,6	127,6	0,15	②	**400**	0,16	0,19	OK
③	0,58	7267	7412,5	1,2	187,5	2,6	5	7,6	127,6	0,15	③	**400**	0,16	0,19	OK
④	0,58	15284	15590,0	1,2	75	1,0	7,6	8,6	124,7	0,31	④	**600**	0,36	0,43	OK
⑤	0,58	13681	13954,9	1,2	125	1,7	5	6,7	130,1	0,29	⑤	**500**	0,25	0,30	OK
⑥	0,58	30496,625	31107,1	1,2	312,5	4,3	5	9,3	122,8	0,62	⑥	**800**	0,64	0,77	OK
⑦	0,58	113844,38	116123,3	1,2	250	3,5	9,3	12,8	114,2	2,14	⑦	**1400**	1,96	2,35	OK
⑧	0,58	30496,625	31107,1	1,2	312,5	4,3	5	9,3	122,8	0,62	⑧	**800**	0,64	0,77	OK
⑨	0,58	26351,75	26879,3	1,2	312,5	4,3	5	9,3	122,8	0,53	⑨	**700**	0,49	0,59	OK
⑩	0,58	187427,25	191179,1	1,2	156,25	2,2	12,8	15,0	109,5	3,37	⑩	**1700**	2,89	3,47	OK
I-3			0,0												
①	0,58	29829,25	30426,4	1,2	312,5	4,3	5	9,3	122,8	0,60	⑫	**800**	0,64	0,77	OK
I-4			0,0												
①	0,58	24801,5	25298,0	1,2	312,5	4,3	5	9,3	122,8	0,50	⑭	**700**	0,49	0,59	OK
II	0,58	102129,3	104173,7	1,2	1130	15,7	5	20,7	98,62	1,66	II-1	1000	0,79	0,94	
Pracha Songkhlo		28250	28815,5								II-2	1000	0,79	0,94	
C1.5, 2.13, 5.2		27701	28255,5											1,885	OK
B1.4		17801	18157,6												
K		10664	10877,5												
L		17713	18067,6												
III	0,58	262215	267464,0	1,2	643,75	8,9	5	13,9	111,70	4,81	III-1	1500	2,25	2,70	
S-3		9500	9690,2								III-2	1500	2,25	2,70	
Asoke		9606	9798,3											5,400	OK
D		46065	46987,1												
J		76000	77521,4												
E		9819	10015,6												
I2.8		106729	108865,5												
S-4		4496	4586,0												
①	0,58	2248	2293,0	1,2	281	3,9	5,0	8,9	124,0	0,05	①	300	0,09	0,11	OK
②	0,58	30085	30687,2	1,2	281	3,9	5,0	8,9	124,0	0,61	①	800	0,64	0,77	OK
IV	0,58	103912	105992,1	1,2	256	3,6	11,0833	14,6	110,19	1,88	III-1	1500	2,25	2,70	
J		28146	28709,4									1500	2,25	2,70	
K		48933	49912,5											5,400	OK
E		11328	11554,8												
Asoke		10505	10715,3												
S-1		5000	5100,1												
①	0,58	6529	6659,7	1,2	106,25	1,5	5,0	6,5	130,9	0,14	①	400	0,16	0,19	OK
②	0,58	19146	19529,3	1,2	250	3,5	6,5	9,9	121,2	0,38	②	600	0,36	0,43	OK
③	0,58	7031	7171,7	1,2	188	2,6	5,0	7,6	127,5	0,15	③	400	0,16	0,19	OK
④	0,58	48933	49912,5	1,2	250	3,5	7,6	11,1	118,3	0,95	④	900	0,81	0,97	OK
V	0,58	69656	71050,4	1,2	630	8,8	5	13,8	112,12	1,28	V-1	600	0,28	0,34	
F		64616	65909,5								V-2	1000	0,79	0,94	
Mitri		5040	5140,9											1,282	OK
VI	0,58	62649,5	63903,6	1,2	406,25	5,6	5	10,6	119,43	1,23	VI-1	1500	2,25	2,70	OK

A12.5 ELECTRIC POWER SYSTEM

(1) Unit Electricity Demand

Unit electricity demand of MEA is presently about one third of the demand in Japan. Taking into account the diffusion of electricity equipment in the Din Daeng Community Area as a new urban center in BMA, the unit demand in 2015 is set up by the increasing factor of 1.5, including general increasing ratio of 1.2 in the MEA master plan. Consequently the unit demand was assumed around a half of the demand in Japan.

Unit Electricity Demand

Building Use	Thai Standard			Japanese Standard*4
	Annual Consumption*1	Max. Electricity Demand		
		Existing*2	Development Area in 2015	
		(a)	(b)=(a)×1.2*4	
	(kWh/m²/y)	(kW/m²)	(kW/m²)	(kW/m²)
Housing				0.070
Office	200	0.034	0.051	0.110
Hotels	300	0.051	0.077	0.120
Department stores	400	0.068	0.103	0.160
Wholesale trade	200	0.034	0.051	
Warehouse and showroom	10	0.002	0.003	
Health service	300	0.051	0.077	0.135
School and university	40	0.007	0.010	0.040
Other	20	0.003	0.005	

Note *1 Annual consumption is according to the Master Plan for Electricity Distribution by MEA.
*2 Max. electricity demand for existing is calculated from annual consumption with loading factor of 1.5.
*3 Electricity demand in 2015 is estimated with increasing ratio of 1.5 as the development area will be a new city center. The ratio also includes diffusion raio of 1.2 from 2000 to 2015, according to MEA electricity demand forecast.
*4 Referred to Data Book for Building Design.

(2) Electricity Demand Projection of the Study Area

Maximum electricity demand recorded 43.7 MW in 2000 and was 86.8 MW in 2015 by the same increasing ratio of the electricity demand forecast in BMA by MEA. The maximum demand in 2011 will be within the capacity of existing San Saeb substation, which will be supplemented by the Din Daeng substation constructed in 2004.

Unit Electricity Demand

Items		2000	2001	2005	2010	2011	2015
Max. Electricity Demand	MW	37.1	39,4	47,5	58,9	61,3	73,7
	MVA	43.7	46,4	55,9	69,4	72,3	86,8
Increasing Ratio	%	-	6,16	4,34	4,27	4,12	4,68
Capacity of Substation							
San Saeb(3*40)	MVA	120,0	120,0	120,0	120,0	120,0	120,0
Din Daeng(2*60)	MVA			120,0	120,0	120,0	120,0
Max. Loading Ratio (2 bays)	%	75,0	75,0	75,0	75,0	75,0	75,0
Max. Loading Ratio (3 bays)	%	80,0	80,0	80,0	80,0	80,0	80,0
Max Loading Capacity (San Saeb only)	MVA	96,0	96,0	96,0	96,0	96,0	96,0
Max. Loading Capacity (total)	MVA	96,0	96,0	186,0	186,0	186,0	186,0

.Note: Max. demand in 2000 is actual record by MEA.
Max. demands between 2001 and 2015 is assumed by the increasing ratio of electricity demand forecast in BMA by MEA.
Loading capacity of substation is 80 % for 3 bays and 75 % for 2 bays, according to the F/S for electric power distribution system by JICA, 1990.

(3) Capacity of Distribution System

Total electricity demand in 2015 was assumed 93.8 MW or 110.4 MVA, which exceeds the existing capacity of San Saeb substation. However MEA has a plan to develop a new substation of 2×60 MVA at the northern side of Mitri road. The new Din Daeng substation will cover the additional demand and be operated in 2004.

Required Capacity of Substation

Descriptions			Electricity Demand	
			2001	2015
Electricity Demand				
	Present Trend	(MW)	37.1	73.7
	Additional Demand by Development	(MW)	-	20.1
	Total	(MW)	37.1	93.8
Required Capacity of Substation		(MVA)	43.7	110.4
Capacity of Substation				
	Existing (San Saeb, 3*40MVA)	(MVA)	96	96
	Additional(Din Daeng, 2*60MVA)	(MVA)	-	90
	Total	(MVA)	96	186

Note: 1) Electricity demand and required capacity is actual record in 2000.
2) Electricity demand in 2015 is based on the increasing ratio of MEA master plan.
3) Loading capacity of substation is 80 % for 3 bays and 75 % for 2 bays, according to the F/S for electric power distribution system by JICA, 1990.

A12.6 TELECOMMUNICATION SYSTEM

(1) Unit telecommunication Demand

Unit telecommunication demand in BMA has not been available. Therefore the unit demand in Japan is used for the reference.

Unit Telecommunication Demand

Building Use		Required Wiring per 1m² of floor	Note
Office		0.015	Effective floor is 70% of total floor area.
Depart, market	Sales floor	0.003	Sales floor is 60% of total floor area.
	Office floor	0.015	Office floor is 10% of total floor area.
Government		0.020	Effective area is 70% of total floor area.
Newspaper company		0.030	Effective area is 70% of total floor area.
Hospital	Sickroom	0.003	Sickroom area is 30% of total floor area.
	Office	0.015	Office floor is 10% of total floor area.
Apartment	For existing	1.000	Ext. wiring is per a room.
	After develop.	1.500	Ext. wiring is 1.5 per a room for Internet.

Source: Data Book for Building Design

(2) Telecommunication Demand Projection

There are 28 distribution cabinets and one specific line for the BMA City hall, according to the TOT's record. Total amount of existing connected lines is 4,553 lines in the Study Area in 1999, which is planned to be 8,641 lines in 2011 in TOT's plan.

On the other hand, demand of the Din Daeng Community Area has been estimated 10,698 without the project and 17,428 with the project. Thus the total telecommunication demand for the Asoke-Din Daeng switching station is assumed 64,463 lines in 2015.

Correspondingly it is necessary to improve the Asoke-Din Daeng S.S. from existing 40,000 lines, though capacity of cable lines and cabinets covers the demand.

A12.7 SOLID WASTE DISPOSAL SYSTEM

(1) Unit solid waste generation

Unit solid waste generation in BMA is tabulated below.

Unit Solid Waste Generation based on Survey Result by PCD, BMA

Building Use	Unit SW Generation	Average
Houses	0.33-1.54 kg/p/d	0.721 kg/p/d
Flats/Apartments	0.20-1.15 kg/p/d	0.571 kg/p/d
Condominium	0.23-1.09 kg/p/d	0.705 kg/p/d
Hotels	0.10-1.58 kg/p/d	0.49 kg/p/d
		1.83 kg/room/d
Hospitals		
-normal waste	0.22-6.45 kg/bed/d	2.034 kg/bed/d
-infected wastes	0.06-0.59 kg/bed/d	0.295 kg/bed/d
Office Buildings	0.01-0.22 kg/m2/d	0.038 kg/m2/d
Malls/department stores	0.01-0.24 kg/m2/d	0.053 kg/m2/d
Fresh markets	0.25-1.00 kg/m2/d	0.618 kg/m2/d
Factories	0.025-5.155 kg/p/d	1.056 kg/p/d
		0.058 kg/m2/d
Schools/academic institutions	0.02-0.57 kg/p/d	0.2809 kg/p/d

Source: Master Plan for Solid Waster Disposal, PCD, 1998

Unit Solid Waste Generation in Master Plan of PCD, BMA

Year	Unit SW Generation (kg/person/day)	Note
2000	1.614	Unit SW generation in Din Daeng district is 1,642 kg/person/day in 2000, similar to the standard rate in BMA, according to the SW collection record.
2015	1.918	

Source: Master Plan for Solid Waster Disposal, PCD, 1998

(2) Collection Capacity in the Study Area

Existing SW collection capacity is 266 ton/time in the Din Daeng district. According to a master plan for solid waste disposal by PCD, BMA, the required average collection time is 357 minutes or about 6 hours, which seems that maximum daily collection trip is two trips/vehicle/day. Therefore the maximum collection capacity is assumed as 532 ton/day.

Existing SW Collection Vehicle in Din Daeng District

Type of Collecting Vehicles	Capacity (ton/vehicle)	No. of Collecting Vehicle (vehicles)	Total Capacity (ton)
Pressure truck	10	1	10
Pressure truck	5	38	190
Pressure truck	2	7	14
Pressure truck	1	3	3
Dump truck	1.5	5	7.5
Trucks	2	3	6
Dump truck	6	4	24
Back-hold	N/A	1	-
Pick-up	N/A	2	-
Solid-waste separating truck	1.5	1	1.5
Container truck	1.5	4	6
Tricycles	1	4	4
Total		73	266

Source: BMA DD District Office

(3) Solid Waste Projection in the Study Area

Solid waste volume was estimated 473.4 ton/day in the Study Area in 2015, which is 120 % of existing SW volume of 376.1 ton/day. Required collection trips are still 1.8 trips which is within the maximum two trips.

Solid Waste Projection in the Study Area

Year	Unit SW Generation (g/p/d)	With Redevelopment	
		Population (pop)	SW Generation (t/day)
2000	1,643	228909	376,1
2005	1,715	234000	401,3
2010	1,817	242200	440,1
2015	1,918	246800	473,4

(4) Solid Waste Projection in the Din Daeng Community Area

Solid waste volume was estimated 42.7 ton/day for existing practice and 66,2 ton/day after the Development in 2015.

Two vehicles of 5 ton collection truck are additionally required to cater the increased solid waste after the development, when estimation follows the conditions: i) standard capacity of collection trucks of 5 ton and ii) maximum collection trips of 2 trips. Furthermore taking the existing conditions of collection system, the necessity of the additional collection vehicles after the development was confirmed upon the following conditions.

- Number of collection times is same with existing conditions, such as:

i) three times a day for major roads,
ii) one time two days for soi roads,
iii) three times a week for housing areas,
iv) one time a day by 4 m^3 or 8 m^3 containers for market and school, and

As a result, the required additional collection trucks after the development consist of:

- four vehicles of 5 ton collection trucks and

However, it is expected that the additional collection trucks will be arranged from the Study Area, as average trips of the Study Area is still about 1.8 trips/vehicle/day in 2015.

Required Collection Vehicle before and after the Development

	Daily Generation t/day	Generation per Collection t/time	Note	Required No. of Tiips trips	Required No. of Vehicles vehicles
Existing					
Major Road	4,8t/day	4,8t/time	1times/day	1	1
Soi Road	2,5t/day	4,9t/time	1time/2days	1	1
Housing	32,7t/day	76,3t/time	3times/week	16	8
School	2,1t/day	2,1t/time	1time/day	1	1
Total	42,1t/day	-			11
Future (2011)					
Major Road	17,99t/day	18,0t/time	1times/day	4	2
Soi Road	2,18t/day	4,4t/time	1time/2days	1	1
Housing	43,89t/day	102,4t/time	3times/week	21	11
School	1,56t/day	3,6t/time	1time/day	1	1
Total	65,62t/day	-			15

Solid Waste Volume Projection in 2001

Zone	User	Floor Area by Use		Population		Unit Solid Waste Generation		Solid Waste
		Use	Floor Area					Generation
1,1	NHA	Office (NHA)	1666	58	Staffs	**0,038kg/m2/day**	**Office (Avg)**	0,1t/day
1,2	NHA	Residential	111354	5914	Residents	**1,090kg/p/day**	**Condominium (Max)**	6,4t/day
1,3	NHA	Residential	43776	2238	Residents	1,090kg/p/day	Condominium (Max)	2,4t/day
1,4	NHA	Residential	43776	2238	Residents	1,090kg/p/day	Condominium (Max)	2,4t/day
1,5	NHA	Residential	45000	2131	Residents	1,090kg/p/day	Condominium (Max)	2,3t/day
1,6	NHA	Residential	23336	1279	Residents	1,090kg/p/day	Condominium (Max)	1,4t/day
1,7	NHA	Residential	45280	2997	Residents	1,090kg/p/day	Condominium (Max)	3,3t/day
1,8	NHA	Residential	22640	1499	Residents	1,090kg/p/day	Condominium (Max)	1,6t/day
1,9	NHA	Residential	15000	1172	Residents	1,090kg/p/day	Condominium (Max)	1,3t/day
1,10	NHA	Commercial&Residential	18790	2211	Residents	1,090kg/p/day	Condominium (Max)	2,4t/day
1,11	NHA	Residential	38800	3237	Residents	1,090kg/p/day	Condominium (Max)	3,5t/day
1,12	NHA	Residential	27487	1026	Residents	1,090kg/p/day	Condominium (Max)	1,1t/day
1,13	NHA	Commercial&Residential	89244	3170	Residents	1,090kg/p/day	Condominium (Max)	3,5t/day
1,14	NHA	Commercial&Residential	31130	899	Residents	1,090kg/p/day	Condominium (Max)	1,0t/day
2,1	BMA	Office (City Hall &District)	73754	14804	Staffs	0,038kg/m2/day	Office (Avg)	2,8t/day
2,2	BMA	Office (Mech. Div.&Mech Workshop)	15626	1113	Staffs	0,038kg/m2/day	Office (Avg)	0,6t/day
2,3	BMA	School (Wichakhon)	6878	300	Kindergarden	**0,281kg/p/day**	**School (Avg)**	0,1t/day
				780	Elementary	0,281kg/p/day	School (Avg)	0,2t/day
				154	Staffs	*0,038kg/m2/day*	*Office (Avg)*	*0,1t/day*
2,4	BMA	Gymnasium	4168	9000	Visitors	*0,140kg/p/day*	*50% of School (Avg)*	*0,3t/day*
2,5	BMA	Outdoor Stadium	62678	6400	Visitors	*0,140kg/p/day*	*50% of School (Avg)*	*0,7t/day*
		Indoor Stadium		9000	Visitors		(Daily Avg. Participants 4,631)	
		Swim. Pool		800	Visitors			
		Meeting Room		214	Visitors			
		Others		500	Visitors			
2,6	BMA	Office (DTPC)	6351	1042	Staffs	0,038kg/m2/day	Office (Avg)	0,2t/day
2,7	BMA	Office (Rabies Div.)	1206	130	Staffs	0,038kg/m2/day	Office (Avg)	0,0t/day
2,8	BMA	Park	102	20	Staffs	0,038kg/m2/day	Office (Avg)	0,0t/day
2,9	BMA	Gass Station	715	20	Staffs	0,038kg/m2/day	Office (Avg)	0,0t/day
2,10	BMA	Office (Const. Center)	4319	1474	Staffs	0,038kg/m2/day	Office (Avg)	0,2t/day
2,11	BMA	Plant	0	56	Staffs	**1,056kg/p/day**	**Factory**	0,1t/day
2,12	BMA	Plant	0	56	Staffs	1,056kg/p/day	Factory	0,1t/day
2,13	BMA	Office (Health Source Center)	2021	60	Staffs	0,038kg/m2/day	Office (Avg)	0,1t/day
2,14	BMA	Office (Vocational Center)	5582	80	Students	0,038kg/m2/day	Office (Avg)	0,2t/day
2,15	BMA	School (Wichutit)	13966	360	Kindergarden	0,281kg/p/day	School (Avg)	0,1t/day
				1350	Elementary	0,281kg/p/day	School (Avg)	0,4t/day
				360	Secondary	0,281kg/p/day	School (Avg)	0,1t/day
				153	Staffs	*0,038kg/m2/day*	*Office (Avg)*	*0,1t/day*
2,16	BMA	Office (Analysis&Research)	1757	74	Staffs	0,038kg/m2/day	Office (Avg)	0,1t/day
3,1	MOL	Office	12187	1926	Staffs	0,038kg/m2/day	Office (Avg)	0,5t/day
3,2	MOL	Office (Care Center)	4110	650	Staffs	0,038kg/m2/day	Office (Avg)	0,2t/day
3,3	MOL	Office	1460	231	Staffs	0,038kg/m2/day	Office (Avg)	0,1t/day
3,4	MOL	Office	628	99	Staffs	0,038kg/m2/day	Office (Avg)	0,0t/day
3,5	MOL	Office (Day Care Center)	676	107	Staffs	0,038kg/m2/day	Office (Avg)	0,0t/day
4,1	MOI	Office	6559	505	13m2/staff	0,038kg/m2/day	Office (Avg)	0,2t/day
5,1	MOE	School (Pibulprachasan)	18854	450	Kindergarden	0,281kg/p/day	School (Avg)	0,1t/day
				1575	Elementary	0,281kg/p/day	School (Avg)	0,4t/day
				810	Lower Secondary	0,281kg/p/day	School (Avg)	0,2t/day
				405	Upper Secondary	0,281kg/p/day	School (Avg)	0,1t/day
		Office		163	Staffs	*0,038kg/m2/day*	*Office (Avg)*	*0,1t/day*
5,2	MOE	School (Samakeebumrun)		270	Elementary	0,281kg/p/day	School (Avg)	0,1t/day
6,1	MOH	Hospital	21054	610	beds	**2,034kg/bed/day**	**Hospital (Avg)**	1,2t/day
		Office		511	Staffs	0,038kg/m2/day	Office (Avg)	0,3t/day
7,1	OPM	Police Station	500	224	Staffs	0,038kg/m2/day	Office (Avg)	0,0t/day
8,1	OTHER	Mosque	870	87	Visitors	0,038kg/m2/day	Office (Avg)	0,0t/day
Total								42,7t/day

Solid Waste Volume Projection in 2011

Zone	Block No.	User	Floor Area by Use		Population		Unit Solid Waste Generation		Solid Waste
			Use	Floor Area					Generation
A	1,1	NHA	Housing C1	43062	2213	Residents	**1,090kg/p/day**	**Condominium(Max)**	2,41t/day
			Commercial	3770	251	15m2/staff			0,00t/day
			Commercial	3770	918	Customers	**0,053kg/m2/day**	**Department Store (Avg)**	0,20t/day
A	1,2	NHA	Housing C1	33600	2516	Residents	1,090kg/p/day	Condominium(Max)	2,74t/day
			Commercial	760	51	15m2/staff			0,00t/day
			Commercial	760	185	Customers	0,053kg/m2/day	Department Store (Avg)	0,04t/day
A	1,20	NHA	Housing	78088	3237	Residents	1,090kg/p/day	Condominium(Max)	3,53t/day
			Commercial	11156	744	15m2/staff			
			Commercial	11156	2717	Custormrs	0,053kg/m2/day	Department Store (Avg)	0,59t/day
B	1,4	NHA	Housing	50000	1850	Residents	1,090kg/p/day	Condominium(Max)	2,02t/day
			Commercial	200000	13333	15m2/staff			0,00t/day
			Commercial	200000	48710	Customers	0,053kg/m2/day	Department Store (Avg)	10,60t/day
C	1,5	NHA	Housing C1	76705	4175	Residents	1,090kg/p/day	Condominium(Max)	4,55t/day
			Commercial	6145	410	15m2/staff			0,00t/day
			Commercial	6145	1497	Custormrs	0,053kg/m2/day	Department Store (Avg)	0,33t/day
C	1,13	NHA	Residence	27487	1047	Residents	1,090kg/p/day	Condominium(Max)	1,14t/day
C	2,11	BMA	School (Wichakhon)	13966	324	Kindergarden	**0,289kg/p/day**	**School**	0,09t/day
					706	Elementary	0,289kg/p/day	School	0,20t/day
					721	Secondary	*0,038kg/m2/day*	*Office*	*0,36t/day*
					154	Staffs	0,289kg/p/day	School	0,04t/day
C	2,12	BMA	School (Wichutiti)	5582	242	Kindergarden	0,289kg/p/day	School	0,07t/day
					1350	Elementary	0,289kg/p/day	School	0,39t/day
					360	Secondary	0,289kg/p/day	School	0,10t/day
					153	Staffs	*0,038kg/m2/day*	*Office*	*0,08t/day*
C	2,13	BMA	Office (Health Source Center)	2012	60	Staffs	**0,038kg/m2/day**	**Office**	0,08t/day
C	2,14	BMA	other (Plant)	17134	56	Staffs	**1,056kg/p/day**	**Factory**	0,06t/day
C	5,2	MOE	School (Samakeebmrun)	1067	270	Kindergarden	0,289kg/p/day	School	0,08t/day
D	1,14	NHA	Park	0	0	Staffs	*0,038kg/m2/day*	*Office*	*0,00t/day*
D	1,6	NHA	Housing C1	124260	5059	Residents	1,090kg/p/day	Condominium(Max)	5,51t/day
D	8,1	OTHER	Mosque	870	87	Visitors	0,038kg/m2/day	Office	0,03t/day
E	1,7	NHA	Housing	5625	272	Residents	1,090kg/p/day	Condominium(Max)	0,30t/day
E	1,8	NHA	Housing	16875	816	Residents	1,090kg/p/day	Condominium(Max)	0,89t/day
E	1,9	NHA	Housing	22500	1088	Residents	1,090kg/p/day	Condominium(Max)	1,19t/day
F	1,10	NHA	Housing	69930	4223	Residents	1,090kg/p/day	Condominium(Max)	4,60t/day
F	2,3	BMA	Office (Construction Center)	4319	1474	Staffs	0,038kg/m2/day	Office	0,16t/day
F	2,4	BMA	Other (Gas Station)	715	20	Staffs	0,038kg/m2/day	Office	0,03t/day
F	2,15	BMA	Other (Plant)	12156	56	Staffs	1,056kg/p/day	Factory	0,06t/day
F	7,1	OPM	Office (Police)	500	224	Staffs	0,038kg/m2/day	Office	0,02t/day
G	2,1	BMA	Office	358599	27154	**13m2/staff**	0,038kg/m2/day	Office	13,63t/day
G	2,2	BMA	Office	63990	4846	13m2/staff	0,038kg/m2/day	Office	2,43t/day
G	2,5	BMA	-	0	9	Staffs	*0,038kg/m2/day*	*Office*	*0,00t/day*
H	1,11	NHA	Public Service	18640	-	13m2/staff	0,038kg/m2/day	Office	
I	2,8	BMA	Stadium	20998	6400	Outdoor Stadium	*0,145kg/p/day*	*50% of School*	*0,67t/day*
					9000	Indoor Stadium		(Daily Avg. Participants 4,631)	
I	2,9	BMA	School (Vocational)	8940	1693	Students	0,289kg/p/day	School	0,49t/day
I	2,10	BMA	Gymnasium	18000	9000	Visitors	*0,145kg/p/day*	*50% of School*	*0,36t/day*
					108	Staffs			
J	3,1	BMA	Office	12187	923	13m2/staff	0,038kg/m2/day	Office	0,46t/day
J	3,2	BMA	Office	4410	334	13m2/staff	0,038kg/m2/day	Office	0,17t/day
J	3,5	BMA	Public Service	676	51	13m2/staff	0,038kg/m2/day	Office	0,03t/day
J	5,1	MOE	School (Pibulprachasan)	18854	50	Kindergarden	0,289kg/p/day	School	0,01t/day
					50	Elementary	0,289kg/p/day	School	0,01t/day
					50	Lower Secondary	0,289kg/p/day	School	0,01t/day
					80	Upper Secondary	0,289kg/p/day	School	0,02t/day
			Office		163	Staffs	*0,038kg/m2/day*	*Office*	*0,08t/day*
K	6,1	MOH	Hospital (Ratchanukun)	21054	610	beds	**2,034kg/bed/day**	**Hospital (Avg)**	1,24t/day
					511	Staffs(office)	*0,038kg/m2/day*	*Office*	*0,25t/day*
K	1,3	NHA	Housing C1	18145	1034	Residents	1,090kg/p/day	Condominium(Max)	1,13t/day
			Commercial	4816	1173	Customers	0,053kg/m2/day	Department Store (Avg)	0,26t/day
L	1,15	NHA	Residence	4502	452	Residents	1,090kg/p/day	Condominium(Max)	0,49t/day
L	1,16	NHA	Residence	6016	903	Residents	1,090kg/p/day	Condominium(Max)	0,98t/day
L	1,17	NHA	Residence	1504	226	Residents	1,090kg/p/day	Condominium(Max)	0,25t/day
L	3,4	MOL	Office -		99	Staffs	0,038kg/m2/day	Office	0,00t/day
L	1,18	NHA	Residence	1504	226	Residents	1,090kg/p/day	Condominium(Max)	0,25t/day
L	1,19	NHA	Residence	3001	452	Residents	1,090kg/p/day	Condominium(Max)	0,49t/day
Total					29789				66,21t/day