4.6 INFRASTRUCTURE DEVELOPMENT PLAN

4.6.1 Approach to Planning

Under the current Additional Study, the URRP infrastructure development plan is reviewed in the light of the latest situation and it is concluded that there is no need of change/amendment for the most of sectors. However where necessary, the plan is extended up to the year 2015 or updated to absorb the changes in the situation which occurred after completion of Final Report (1) of URRP. Table 4.6.1 summarizes the approach to the infrastructure development planning in the Additional Study.

Table 4.6.1 Infrastructure Development Planning

Infrastructure Development Planning under Additional Study		Sector/Project
1	Full use of URRP Plan	Water supply, health, education, flood control, ferry terminal, disaster preparedness
2	Supplementary report to URRP Plan	Solid waste management, waste water treatment, housing
3	Modification of URRP Plan	Roads, urban drainage
4	Additional Plan	Electric power supply, tel-communication

Source: The Additional Study Team

This report therefore presents only (i) Supplementary report to URRP Plan, (ii) Modification of the URRP Plan, and (iii) Additional Plan. The preliminary cost estimate and implementation plan are reported in Subsections 4.6.5 and 4.6.6 respectively.

4.6.2 Supplementary Report to the URRP Plan

(1) Wastewater Treatment and Disposal

According to the URRP Plan, septage generation is estimated to amount 144 m^3/day in 2009 and 204m^3/day in 2015, whereas the present treatment capacity is limited to 50m^3/day. It is reported that UNICEF has committed to construct new septage treatment plant with a daily treatment capacity of 60m^3/day adjacent to the existing one. Even after completion of the UNICEF plant, it is not possible to properly treat the estimate volume of septage in 2009. It is recommended that DPK puts forward appropriate action for realization of additional plant in order to avoid any adverse effect on public hygiene and environment.

(2) Solid Waste Management

Currently domestic garbage and solid waste from commercial activities are treated by means of landfill which is located in Gampong Jawa. It is reported by DKP that the existing site is foreseen to be no longer usable owing to a huge amount of debris and other waste generated after the disaster.

According to the URRP Plan, DKP predicts the volume of dumping volume to be approximately 1.3 million m^3 for the coming 20 years and it is necessary to develop a new

land fill site with the area of 25 ha assuming average filling depth/height of 5m.

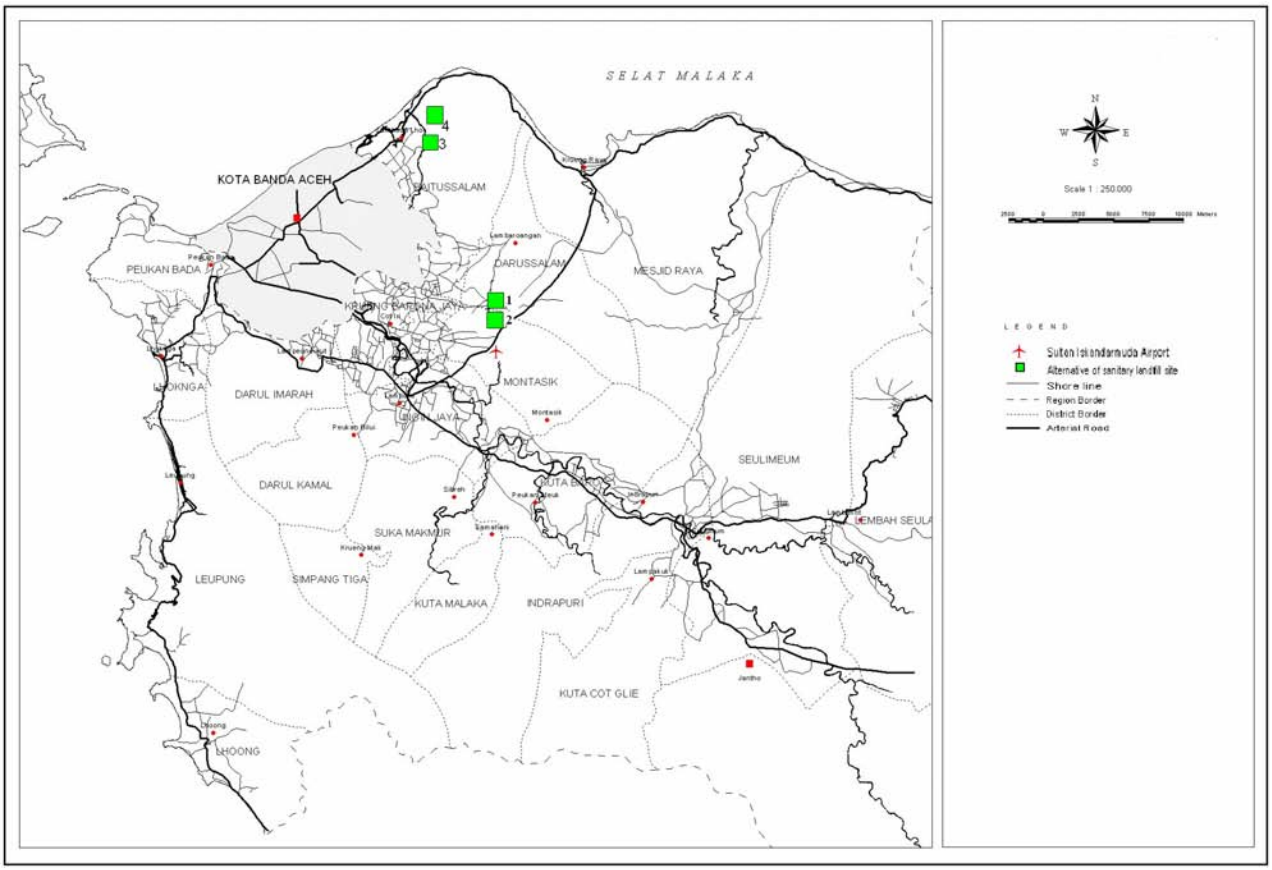
Under assistance of GTZ, the solid waste management study is in progress including selection of landfill sites. As of August 2005, four alternative sites are identified in ABR as shown in Table 4.6.2.

Table 4.6.2 Alternatives of Sanitary Landfill Sites

No.	Location	District	Geographic Coordinate	Surface Area (ha)	Distance to Main Waste Source (km)
1	Koeta Teu	Montasik	772258 / 608169	15	21.5
2	Kleumbang	Darussalam	772258 / 609614	15	22.2
3	Gapang	Baitussalam	767636 / 620611	25	21.6
4	Taleue Seuke	Baitussalam	767873 / 622393	25	17.8

Source: Progress by GTZ, August 2005

The locations of the above sites are as shown in Figure 4.6.1.



Source: The Additional Study Team

Figure 4.6.1 Locations of Alternative Dumping Sites

In addition to development of new dumping site, it will be required to reinforce collection and

transportation vehicle. URRP has estimated such requirement but it is expected that GTZ study will produce more detailed plan in the light of the latest conditions.

(3) Housing

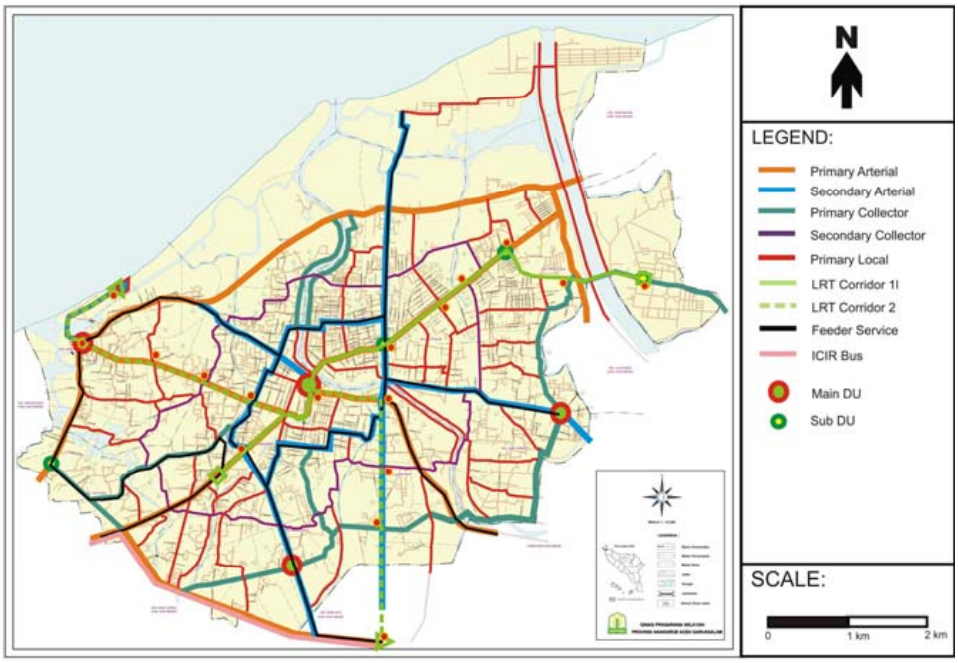
Construction of houses is one of top priority in the rehabilitation and reconstruction activities in BAC, as internally dislocated people have lost their houses. According to BRR plan, new houses of 17,269 are to be built in total, of which 14,161 houses have been committed by donors, NGOs and government. As of February 2006, 2,498 houses completed and 3,383 are houses in progress. Out of the completed houses, 414 houses have already occupied.

4.6.3 Modification of the URRP Plan

(1) Roads

URRP has elaborated road development plan and hierarchy. Under the current Additional Study, LRT concept is however introduced as one of means of land transport. Its pre-feasibility study is expected to be conducted in 2007 under the assistance of the Chinese government. The road development would be required to be adjusted depending on the result of the study and subsequent implementation program by the government. At this stage it is not possible to predict how road development plan would be affected.

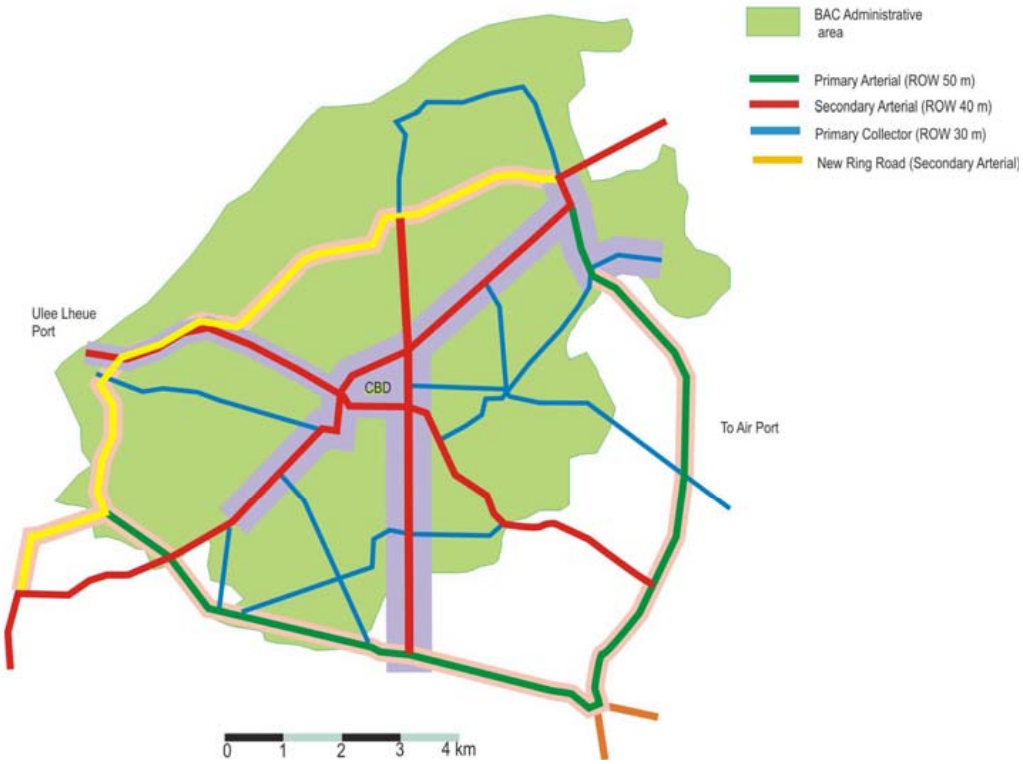
A concept of LRT is studied under the Additional Study as reported in Chapter 2 of this report. Assuming that LRT is integrated into road network, road network in BAC would be as presented in Figure 4.6.2. It should be however be noted that this is just one of cases and not definite plan.



Source: The Additional Study Team

Figure 4.6.2 Road and LRT Network Plan

The road network without LRT is preliminarily studied for the target year 2015. The study is however conservative without traffic volume data. It is therefore recommended to carry out detailed study including traffic survey in future. The road network in 2015 is as illustrated in Figure 4.6.3. In the year 2015 the road hierarchy may be updated as shown in the figure and road network would comprise primary system and secondary system.



Source: The Additional Study Team

Figure 4.6.3 Road Hierarchy in 2015

(a) Primary system

It consists of primary arterial and collector roads. The former connects BAC to satellite cities, growth centers and other urban centers outside NAD. The latter links all the main corners in BAC.

(b) Secondary system

It is also composed of the secondary arterial and collector roads. They support the primary system, and collect rip or traffic from the small unit of village and trip from street.

The alignment of the coastal road, Syah Kuala road and Baru street has been proposed to be modified owing to land constraint.

The road class and their characteristics are proposed to be as presented in Table 4.6.3.

Table 4.6.3 Road Hierarchy and Their Characteristics

Class of road	Types of Road	Dimensions	Design speed	Width (ROW)
Class 1	Primary Arterials	6 L 2 W/D	>70 km/hr	50 m
	Secondary Arterials	6 L 2 W/D	>60 km/hr	40 m
Class 2	Primary Collectors	4 L 2 W/D	>50-60 km/hr	30 m
	Secondary Collectors	4 L 2 W/UD	<50 km/hr	20 m
Class 3	Primary Locals	2 L 2 W/UD	<30 km/hr	12 m

Source: The Additional Study Team

(2) Urban Drainage

Existing drainage facilities have been completely damaged by the disaster. Prior to disaster the drainage system covered approximately 35 km^2 of the whole area of BAC and is composed of three (3) zones. Because of topography, it was necessary to drain the storm water by means of pumping and there were 8 pumping stations in total. Excepting one pumping station all other pumping stations were washed away and in addition many of flood gates were also collapsed. Even before the disaster low lying area of BAC was subjected to frequent inundation but loss of pumping facilities and gates has resulted in aggrieving the inhabitants by increasing risks of inundation and hampering economic and administrative activities.

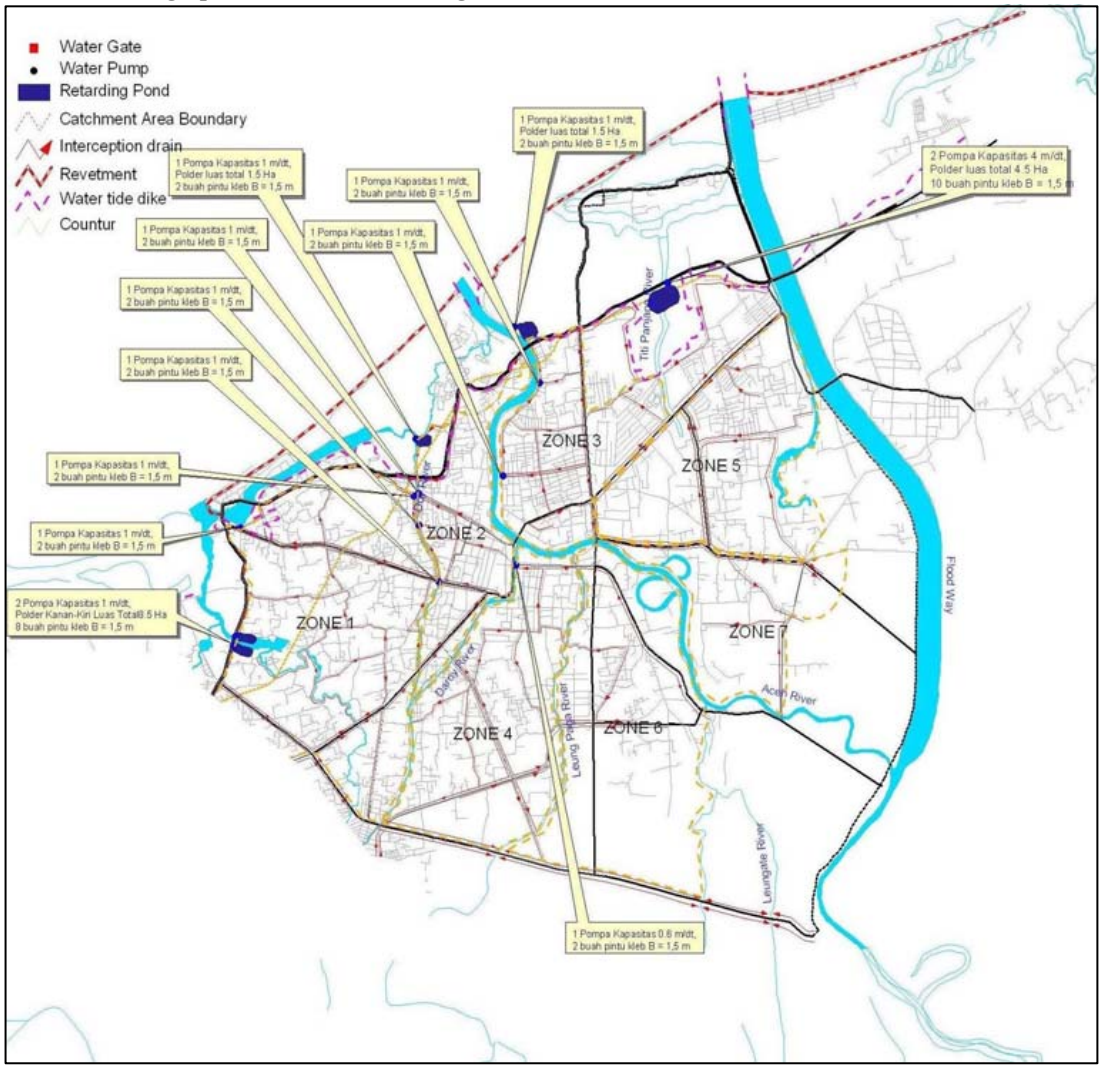
The URRP Plan has been prepared based on the review of a master plan on drainage, which was elaborated by PU Dinas. BRR meantime in cooperation with PU Dinas launched to establish a new drainage planning scheme and its study was entrusted to two (2) Indonesian consulting firms. The study was commenced from August 2005 and is scheduled to complete by March 2006. The Additional Study Team has collected both the URRP plan and ongoing plan and compared each other as Tabulated in Table 4.6.4.

Table 4.6.4 Technical Comparison of Two Drainage Plans

Description	URRP Plan		Ongoing Plan	
A. Zoning				
Number of Zones	3		7	
Drainage Area (ha)	Zone-I	2,900	Zone-1	1,150
	Zone-II	1,120	Zone-2	320
	Zone-III	2,050	Zone-3	320
	-	-	Zone-4	630
	-	-	Zone-5	1,330
	-	-	Zone-6	780
	-	-	Zone-7	380
	Total	6,070	Total	4,910
B. Design Conditions				
Allowable Inundation Depth	0 cm		0 cm	
Allowable Inundation Duration	0 hrs		0 hrs	
Return Period of Design Rainfall	5-yr		5-yr	
Design Rainfall (mm/day)	Zone-I	165	Zone-1	153
	Zone-II		Zone-2	153
	Zone-III		Zone-3	160
	-	-	Zone-4	153
	-	-	Zone-5	160
	-	-	Zone-6	169
	-	-	Zone-7	160
C. Runoff Calculation Method				
For Channel Design	Rational Method		Rational Method	
For Pump Design	Unit Hydrograph		Unit Hydrograph	
For Retarding Basin Design				
D. Planned Drainage Facilities				
Pumping Station	8	locations	13	locations
(Total Capacity)	21.05	m^3/sec	34	m^3/sec
Retarding Basin	2	locations	4	locations
	n.a		13.5	ha
	615,000	m^3	270,000	m^3
Primary Drain	51,362	m	n.a	

Source: URRP, PT. Wahana, PT Global

The new drainage plan is as shown in Figure 4.6.4.



Source: PT Global, PT Whama

Figure 4.6.4 New Drainage Plan of BAC

There is a couple of differences in planning fundamental as follows:

(a) The URRP plan basically follows the existing PU Dinas plan, which is based on premise that submerged lands would be reinstated to their original state, whereas the ongoing plan is based on the prevailing geographic conditions after the disaster.

(b) Under the ongoing plan it is pre-determined that the submerged land is separated by means of construction of barrier almost in parallel with the coast line. This subsequently results in reduction of drainage area. In fact the URRP plan has a total drainage area of 6,070 ha, while the ongoing plan is limited to 4,910 ha.

(c) As a part of the structure plan of BAC, URRP has proposed to construct coastal

road but circumstance after the URRP study revealed that it is probably difficult to align the road along with URRP proposal. Re-alignment is required accordingly, which also affects zoning of drainage area.

There are a lot of differences in many planning and design items between the URRP plan and the ongoing plan. The ongoing plans involves more number of pumps and more pumping capacity compared to the URRP plan, though those data is still of interim output and subject to further update. It is expressed by BRR and PU Dinas that the drainage program would be implemented based on the outputs of the ongoing plans, though those outputs be scrutinized from technical and economic point of views.

4.6.4 Additional Plan

(1) Electric Power Supply

The power demand forecast is made under the following assumption and are as shown in Table 4.6.5.

- Average power demand per household : 900 – 1300 watt
- Electric power demand for facilities : 30% of domestic power demand
- Electric power demand for street lighting : 30% of domestic power demand
- Load Factor : 80% of total power demand

Table 4.6.5 Future Electric Power Demand in BAC (2006 – 2015)

Description	Electric Power Demand (MW)		
	2006	2009	2015
1. Demand			
Domestic	53.3	66.0	93.7
Public facility	16.6	19.8	28.1
Street lighting	5.3	6.6	9.4
Total	75.2	92.5	131.1
2. Demand with Load factor	60.1	74.0	104.9

Source: Additional Study Team

The electric power supply in BAC is under jurisdiction of PLN. It is at moment difficult to say the source of power supply but PLN will appropriately implement the reinforcement of transmission and distribution lines in anticipation of growing demand.

(4) Tele-communication

Though cellar phone is spreading rapidly, there is still demand on land line telephone. Its demand is forecast based on the following assumptions and shown in Table 4.6.6.

- Residential, commercial,
  Government, public services : 17 service connections/100 people
- Industry, tourism, warehouse : 1 service connection/plot (0.5 ha)
- Telephone kiosk : 1 service connection/5000 people
- Public telephone : 1 service connection/1000 people

Table 4.6.6 Communication Demand in BAC (2006 – 2015)

Description	Service Connection (SST)		
	2006	2009	2015
1. Residential, commercial, services, government, public & social facilities	38,831	43.180	61.252
2. Industry, tourism	340	435	654
3. Telephone kiosk	41	51	72
4. Public telephone	204	254	360
Total	39,416	44,026	62,338

Source : Additional Study Team, 2006

There has been a very significant growth of cellular customers (such as Telkom Flexi users) in BAC after the disaster. In anticipation of continuously increasing demand, Telkom Flexi has a plan to install 21 Base Transceiver System (BTS) to meet increasing demand in BAC. Other cellular providers such as Telkomsel, Indosat, Excelcomindo, Mobil 8, etc also have plans to expand their service in the city.

4.6.5 Tentative Construction Time Schedule

The construction time schedule in the Final Report (1) of URRP is updated in this Additional Study based on assessment of urgency of the proposed projects in the light of the present situations and the modification of the plan of a couple of infrastructure development project. The updated construction time schedule is as shown in Figure 4.6.5.

Although the concept of LRT is studied, its implementation plan is not included. It is assumed that LRT would be realized after 2015.

4.6.6 Preliminary Cost Estimate

The preliminary cost estimate in the Final Report (1) of URRP is updated for a couple of the projects of which development plan has been modified after URRP. The conditions of the cost estimate are the same as those adopted in the said report. Table 4.6.7 summarizes the preliminary cost estimate of the rehabilitation and reconstruction works in BAC. The following points should however be noted:

(1) The reconstruction of urban drainage system is being studied and this plan upon its completion, probably would be adopted for actual implementation. Since the construction cost is yet estimated, the same amount as stated in the above report is tentatively referred to.

(2) The cost of health and education includes not only cost of the rehabilitation and reconstruction works but also cost for the periodical supply of materials and other requisites.

In the URRP Plan the total rehabilitation and reconstruction cost is estimated at Rp. 9,292 billion, while it is updated to Rp. 8,249 billion in the Additional Stud

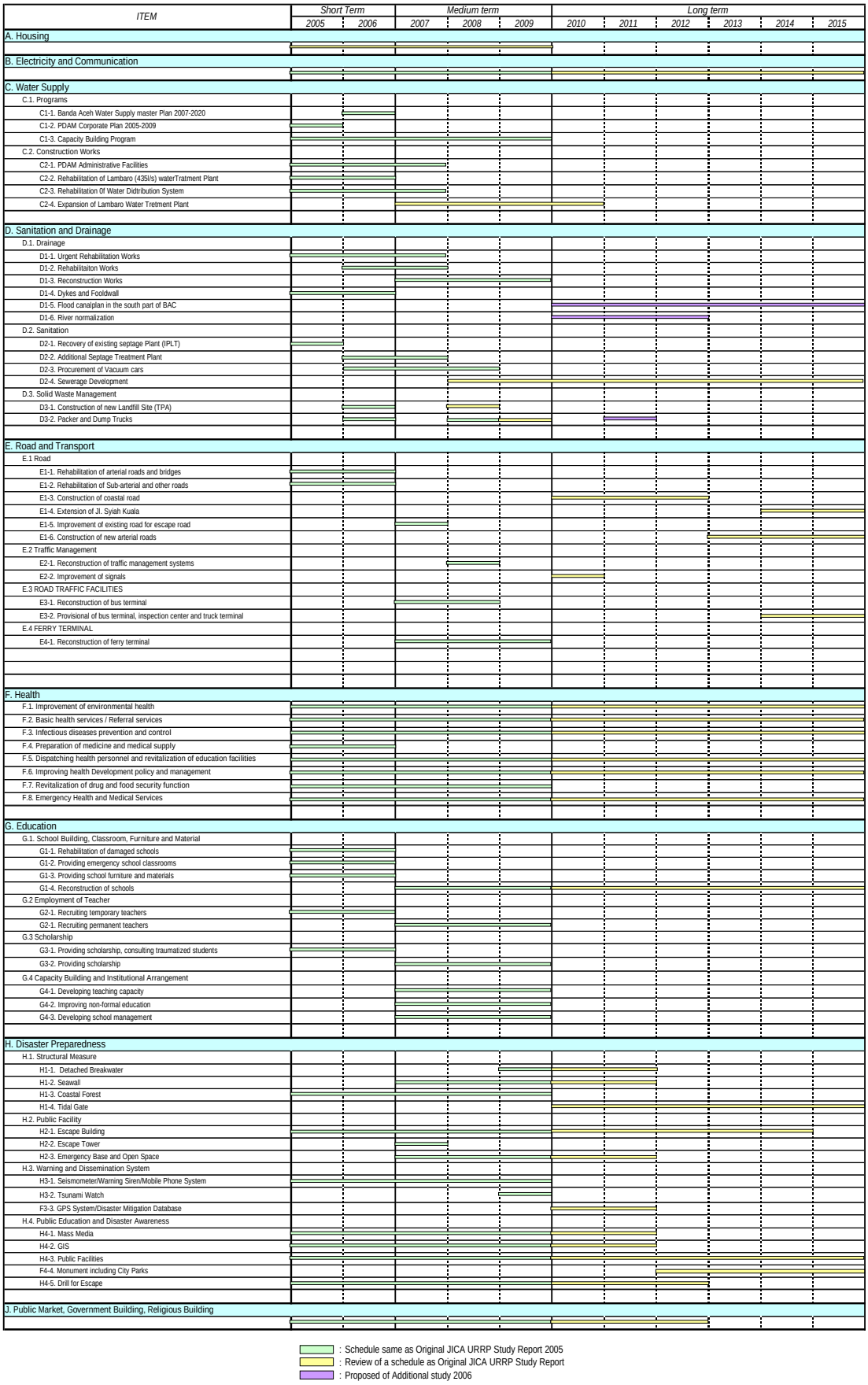


Figure 4.6.5 Implementation Schedule

Table 4.6.7 Preliminary Cost

ITEM	Total (Unit : Billion Rp.)	Remarks
A. Housing		
Sub Total	863.46	
B. Electricity and Communication		
Sub Total	2,712.45	
C. Water Supply		
C.1. Programs		
C1-1. Banda Aceh Water Supply master Plan 2007-2020	3.14	
C1-2. PDAM Corporate Plan 2005-2009	0.33	
C1-3. Capacity Building Program	5.70	
C.2. Construction Works		
C2-1. PDAM Administrative Facilities	12.80	
C2-2. Rehabilitation of Lambaro (435l/s) waterTratment Plant	14.42	
C2-3. Rehabilitation 0f Water Didtribution System	87.65	
C2-4. Expansion of Lambaro Water Tretment Plant	21.67	
Sub Total	145.71	
D. Sanitation and Drainage		
D.1. Drainage		
D1-1. Urgent Rehabilitation Works	130.28	for Rehabilitation and Reconstruction Works tentatively assumed to be same
D1-2. Rehabilitaiton Works	49.40	as the URRP estimate, though the development plan might change.
D1-3. Reconstruction Works	177.97	
D1-4. Dykes and Fooldwall	95.00	
D1-5. Flood canalplan in the south part of BAC	0.09	Revised
D1-6. River normalization	0.03	Revised
D.2. Sanitation		
D2-1. Recovery of existing septage Plant (IPLT)	7.98	
D2-2. Additional Septage Treatment Plant	6.94	
D2-3. Procurement of Vacuum cars	5.07	
D2-4. Sewerage Development	176.74	
D.3. Solid Waste Management		
D3-1. Construction of new Landfill Site (TPA)	206.52	
D3-2. Packer and Dump Trucks	3.96	Revised
Sub Total	859.98	
E. Road and Transport		
E.1 Road		
E1-1. Rehabilitation of arterial roads and bridges	75.98	
E1-2. Rehabilitation of Sub-arterial and other roads	543.22	
E1-3. Construction of coastal road	247.00	
E1-4. Extension of Jl. Syiah Kuala	43.87	
E1-5. Improvement of existing road for escape road	19.74	
E1-6. Construction of new arterial roads	200.22	
E.2 Traffic Management		
E2-1. Reconstruction of traffic management systems	4.15	
E2-2. Improvement of signals	9.20	
E.3 ROAD TRAFFIC FACILITIES		
E3-1. Reconstruction of bus terminal	63.39	
E3-2. Provisional of bus terminal, inspection center and truck terminal	93.21	
E.4 FERRY TERMINAL		
E4-1. Reconstruction of ferry terminal	67.60	
Sub Total	1,367.58	
F. Health		
F.1. Improvement of environmental health	58.40	
F.2. Basic health services / Referral services	255.00	
F.3. Infectious diseases prevention and control	17.60	
F.4. Preparation of medicine and medical supply	1.00	
F.5. Dispatching health personnel and revitalization of education facilities	94.50	
F.6. Improving health Development policy and management	19.90	
F.7. Revitalization of drug and food security function	26.00	
F.8. Emergency Health and Medical Services	25.40	
Sub Total	497.80	
G. Education		
G.1. School Building, Classroom, Furniture and Material		
G1-1. Rehabilitation of damaged schools	460.00	
G1-2. Providing emergency school classrooms	61.00	
G1-3. Providing school furniture and materials	22.00	
G1-4. Reconstruction of schools	266.00	
G.2 Employment of Teacher		
G2-1. Recruiting temporary teachers	33.00	
G2-1. Recruiting permanent teachers	6.00	
G.3 Scholarship		
G3-1. Providing scholarship, consulting traumatized students	45.00	
G3-2. Providing scholarship	14.00	
G.4 Capacity Building and Institutional Arrangement	0.00	
G4-1. Developing teaching capacity	17.00	
G4-2. Improving non-formal education	3.00	
G4-3. Developing school management	42.00	
Sub Total	969.00	
H. Disaster Preparedness		
H.1. Structural Measure		
H1-1. Detached Breakwater	133.13	
H1-2. Seawall	73.10	
H1-3. Coastal Forest	14.86	
H1-4. Tidal Gate	61.90	
H.2. Public Facility	0.00	
H2-1. Escape Building	25.80	
H2-2. Escape Tower	0.62	
H2-3. Emergency Base and Open Space	46.43	
H.3. Warning and Dissemination System		
H3-1. Seismometer/Warning Siren/Mobile Phone System	20.63	
H3-2. Tsunami Watch	3.10	
F3-3. GPS System/Disaster Mitigation Database	15.48	
H.4. Public Education and Disaster Awareness		
H4-1. Mass Media	6.50	
H4-2. GIS	14.73	
H4-3. Public Facilities	24.97	
F4-4. Monument including City Parks	64.23	
H4-5. Drill for Escape	1.44	
Total	506.92	
J. Public Market, Government Building, Religious Building		
Sub Total	326.56	
TOTAL	8,249.45	

CHAPTER 5 PLANNING ON THREE RECONSTRUCTION MODELS

5.1. SELECTION OF MODEL AREAS

At the first it was necessary to select three (3) areas to be suitable for reconstruction model development. The selection was made on the basis of the following criteria:

(1) Is there a serious need in reconstruction and development?

(2) Is conceivable reconstruction and development feasible?

(3) Is there no social, political and environmental issues/problems in the area in question?

(4) Is the conceivable reconstruction and development useful and adaptable to other parts of the city?

As a result of the assessment of a number of candidate sites and consultation to BAC government and BRR, Ulee Lheue, Peunayong and Lueng Bata areas have been selected finally for reconstruction model areas. Their locations are as shown in Figure 5.1.1.

Source: BAC Aerial Photography

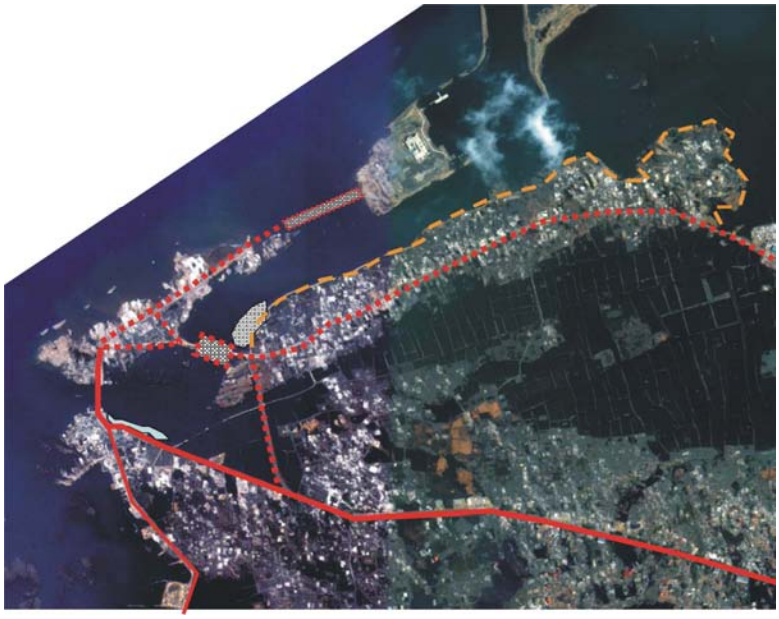
Figure 5.1.1 Location of 3 Reconstruction Model Areas

5.2 ULEE LHEUE MODEL AREA

5.2.1 General Condition

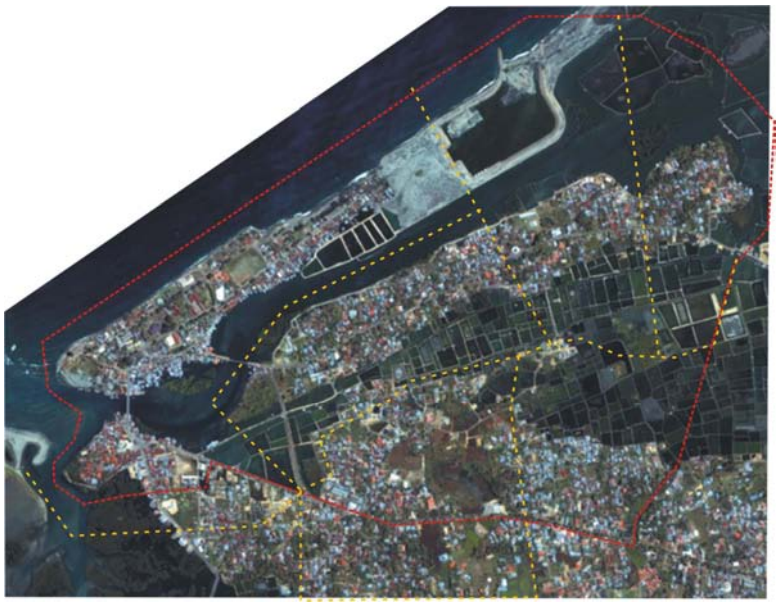
(1) Location and topography

The proposed Ulee Lheue area is located within Meuraxa District and encompasses four (4) villages such as Ulee Lheue, Deah Glumpang, Deah Baro, and Alue Deah Tengoh and covers the area of 314 ha. The area is facing to the Strait of Malacca, and is one of the hardest hit areas by the 2004 disaster. Figures 5.2.1 and 5.2.2 show the aerial views of the area before and after the 2004 disaster respectively.



Source: BAC Aerial Photography

Figure 5.2.1 Aerial View of Ulee Lheue Area before Disaster



Source: BAC Aerial Photography

Figure 5.2.2 Aerial View of Ulee Lheue Area after Disaster

As seen in the above figures, the area is characterized by very flat topography with elevation 0-3 m above mean sea level. There is a small island where a ferry terminal was under construction as seen in Figure 5.2.1at the time of disaster. After the disaster, majority of land area of the island was submerged.

(2) Land Use

There is no detailed land use data available for the area. From the aerial photograph, it is estimated that majority of land is shared by residential area and a number of fishponds before the disaster. After the disaster and subsequent clearing activities, the area is almost flattened and most of fishpond area is inundated. Mass Grave that bury around 15,000 tsunami victims was recently completed in this area.

(3) Socio-economic Condition

(a) Population

Tables 5.2.1 and 5.2.2 describe the present and projected population of Ulee Lheue Model Area respectively, according to information from Meuraxa District & Head of Community by January, 2006.

Table 5.2.1 Pre-and Post Disaster Population in Ulee Lheue Model Area

No	Village	Pre-tsunami population		Post-tsunami population		Survival Rate		Returnee
		Person	House hold	Person	House-hold	Person	House-hold	Household
1	Ulee Lheue	4,154	839	784	157	18.9%	67.93%	72
2	Deah Glumpang	1,172	294	332	67	28.3%	29.18%	120
3	Deah Baro	1,010	256	202	40	20.0%	67.19%	70
4	Alue Deah Tengoh	1,492	349	201	40	13.5%	59.31%	175
Total		7,828	1,738	1,519	304			

Source: Meuraxa District & Head of Community, January 2006

Table 5.2.2 Projected Population in Ulee Lheue Model Area

Name of Villages	Projected Population					
	2005	2006	2007	2008	2009	2015
Ulee Lheue	784	787	790	793	796	1,129
Deah Glumpang	332	330	328	326	325	461
Deah Baro	202	202	203	203	203	288
Alue Deah Tengoh	219	220	220	220	221	313
Total	1,537	1,539	1,541	1,542	1,545	2,191

Source: The Additional Study Team

As seen in the above the population was reduced to almost 30 % after the disaster and even the survivors are now dislocated.

(b) Economic activity

Before the disaster majority of population is supposed to be relied on fishery, fish cultivation and their related activities for their livelihood, though the area is not far from the commercial center in BAC. But level of income is estimated to be very low as explained in Chapter 2 of this report. The 2004 disaster caused serious impact on livelihood of the people. Fishponds, fishing boats and fish market were all washed away and/or destroyed. It is a matter of significant to provide the returnee with houses and adequate support to sustain their livelihood.

5.2.2 Rehabilitation Program and Ongoing Works

The rehabilitation works are being executed energetically by the government and under assistance and help of donors and NGOs. Table 5.2.3 summarizes the rehabilitation works by sector and executing bodies involved for each of four villages.

Table 5.2.3 Sector and Executing Body

No	Name of Villages	Executing Bodies					
		Village Planning	Land Tenure	Housing	Infrastructure & Utilities	Public Facilities	Economic Sector
1	ULEE LHEUE ▪ 1,129 persons ▪ 526 households	UPLINK	BPN	UPLINK	• UPLINK • KUWAIT	UPLINK	UPLINK
2	DEAH GLUMPANG ▪ 370 persons ▪ 174 household	UN-HABITAT	BPN	• OXFAM • WVI • UN HABITAT	• P2KP • UN-HABITAT • CARE • WVI • KUWAIT • PU	• WVI	• NOR-WEGIA • ELSAK
3	DEAH BARO ▪ 312 persons ▪ 172 household	UN-HABITAT	BPN	• OXFAM • YBI	• P2KP • OXFAM	• P2KP	• P2KP • ELSAK
4	ALUE DEAH TENGOH ▪ 375 persons ▪ 207 household	-----	BPN	• OXFAM • YBI	• CARE • WVI • OXFAM • P2KP	• P2KP	• OXFAM • IRD • BPMD • ELSAK

Source: Meuraxa District & Head of Community, January 2006

There are a number of rehabilitation works in progress as of February 2006 as summarized in Table 5.2.4.

Table 5.2.4 Status of Rehabilitation Program (As of February 2006)

No	Programs	Funding	Executor	Status
I	Housing Reconstruction	NGO's, donors, P2KP	NGO's, donors P2KP, Community	In progress
II	Road expansion and elevating			
	▪ Rama Setia Street	BRR	City Government	In progress
	▪ Iskandar Muda Street ▪ Pelabuhan Ulee Lheue Street	ADB 2005	NAD Province, BAC	Land acquisition is in process
	▪ Pelabuhan Ulee Lheue Street	UNDP 2005	BAC	In progress
III	Ulee Lheue Harbor and Supporting Facilities Rehabilitation	Australia	BAC	In progress
IV	Dike Development			
	▪ Sea wall/Breakwater	BRR	BRR and BAC	Partly in progress
	▪ Water tide dike	BRR	BRR and BAC	In progress
V	Redevelop Medan-Banda Aceh railway	France Government (SCNF)	Indonesia -France	Commitment of Pre Feasibility Study
VI	Mass Grave Development	UNDP, Islamic Relief	Islamic Relief	Physical execution in process
VII	Fish Auction Center Development	Norway, BRR	Norway, BRR	In progress
VIII	Planning and Reconstruction Program in four villages	NGO's, Donors, BRR	NGO's, Donors, BRR	Partly in progress
IX	Rehabilitation of Fishpond and others economic Development	NGO's, Donors	NGO's, Donors	In progress
X	Water supply	Kuwait, Japan	Kuwait, JICS	In progress

Source: The Additional Study Team

5.2.3 Development Need and Constraint

Since the proposed area has been devastated completely, every infrastructure, housing, social and community facilities are required to be re-built. Especially construction of houses should be implemented at first track to allow the dislocated families back to their original land as earlier as possible. In addition it is important to install appropriate disaster forecasting and warning system and construct well organized evacuation roads to minimize effect of the potential disaster in future. Further it is also important to furnish the inhabitants adequate facilities to sustain their livelihood.

Construction of houses has been in progress expediently by the government and NGOs, but it is unclear when the demand could be met. There is no village map in one of four villages in the area concerned. For construction of roads and bridges, there would be no land problem, subject to further investigation.

5.2.4 Preliminary Development Plan and Cost Estimate

(1) Preliminary Development Plan

In principle Ulee Lheue area is proposed to be re-developed with a concept of beach front area with disaster preparedness, green area concept and appropriate facilities to sustain the in habitats including tourism facilities. This area will therefore have a mixed function as noted below:

(a) Historic Tourism Theme: (i) tsunami victim mass grave; (ii) historical mosque; (iii) tsunami museum area; (iv) tsunami sculpture park.

(b) Water Tourism Theme: (i) fishing area /leisure fishing; (ii) water tourism area

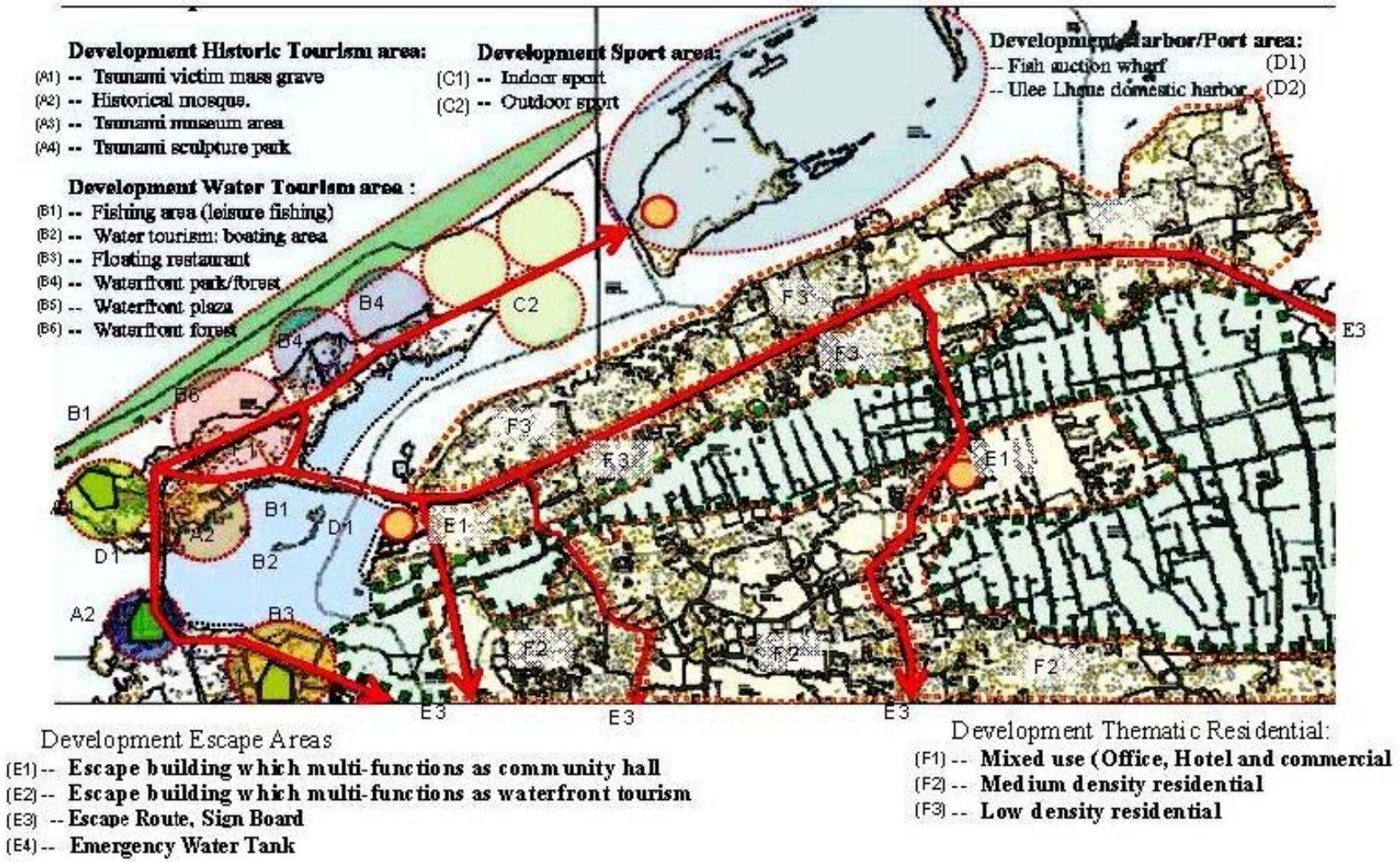
(c) Residential: (i) mix use of residential and commercial; (ii) medium – high rise (Hotel) residential.

(d) Waterfront Green Theme: (i) waterfront park/forest; (ii) waterfront plaza; (iii)

(e) Harbor: (i) fish market; (ii) domestic harbor.

(f) Escape Areas: (i) community hall with disaster warning facilities, (ii) community road (evacuation road)

Figure 5.2.3 shows a reconstruction concept. On a basis of this concept, a preliminary reconstruction development plan is deliberated as given in Figure 5.2.4. Further as a part of disaster mitigation plan, a detailed plan of community road which will be a part of evacuation roads is prepared as shown in Figure 5.2.5.

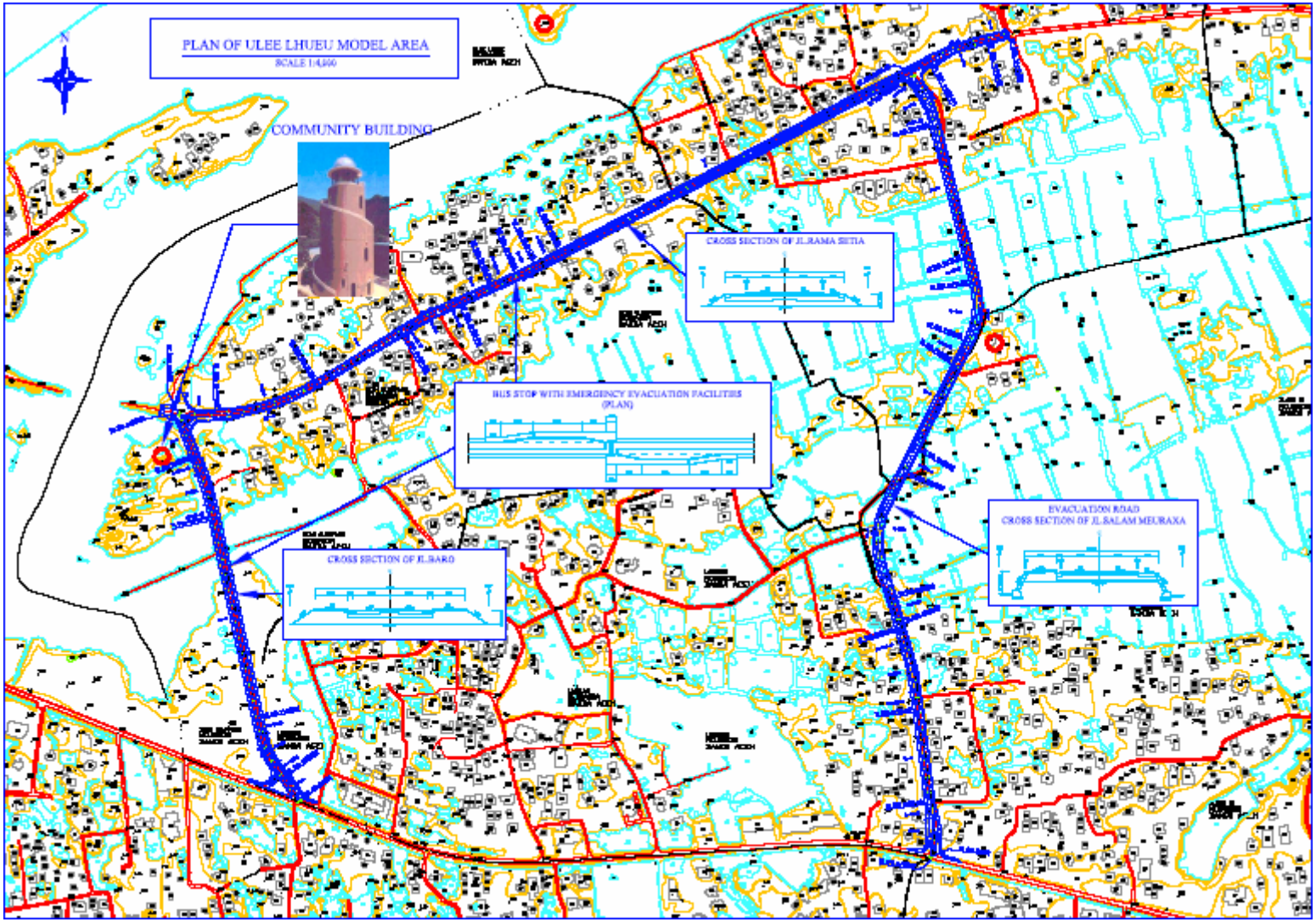


Source: The Additional Study Team

Figure 5.2.3 Development Concept for Ulee Lheue

Source: The Additional Study Team

Figure 5.2.4 Preliminary Development Plan of Ulee Lheue



Source : the Additional Study Team

Figure 5.2.5 Preliminary Alignment of Design of Community Road (Evacuation Road) in Ulee Lheue Area

(2) Outlines of Reconstruction Works

The proposed development plan would include the following construction works: As of February 2006 some works have already been in place, and therefore it is necessary to catch up exactly the rehabilitation works in progress and/or planned already prior to actual implementation.

(a) Houses for affected peoples

(b) Infrastructure such as (i) seawall/break water, (ii) water tide dike, (iii) water and power supply, (iv) community roads, (v) storm water drainage

(c) Public and social facilities for district and village scale

(d) Disaster mitigation facilities such as (i) community roads (escape roads), (ii) community hall (escape building) with warning system

(e) Formation of waterfront area such as (i) historic tourism area, (ii) water tourism area, (iii) thematic residential, (iv) waterfront green area, (v) harbor area

(f) Production facilities such as (i) fish pond, (ii) fish market

(3) Cost estimate

The construction cost for the proposed development is roughly estimated as given in Table 5.2.5.

Table 5.2.5 Indicative Cost Estimate and Construction Period

No	Programs	Volume	Cost Estimation (Rp. Billion)
I	Housing	90 units	4.50
II	Infrastructure and Utilities:		
	• Seawall	2,370 m	4.22
	• Water tide dike	5,852 m	35.11
	• Roads	7,205 m	23.15
	• Drainage	13,304 m	19.29
	• Bridges	226 m	24.03
III	Public and Social Facilities	3,500 m^2	4.31
IV	Community Roads	4,020 m	24.00
V	community Hall	3 units	12.48
VI	Waterfront Area	6.28 million m^3	20.00
	Total		191.09

Source: The Additional Study Team

The above cost is estimated under the following condition:

(a) The development work will involve the ones to be realized and implemented by private sector. For such no cost is estimated

(b) The estimated cost is only for the public work which would be realized by the government, donors, and NGOs

(c) No cost of the ongoing works is taken into account

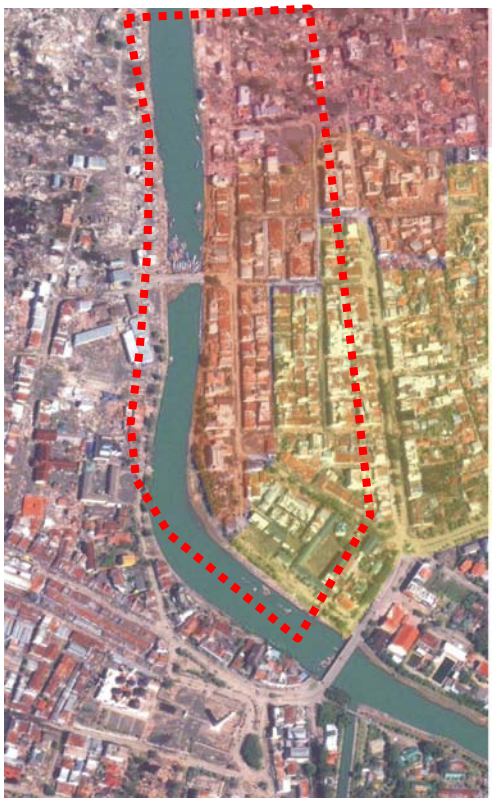
5.3. PEUNAYONG MODEL AREA

5.3.1 General Condition

(1) Location and topography

The proposed Peunayong area is located in the center of BAC and occupies part of the Kuta Alam District, 48.6 ha in a gross area. The area is characterized by very flat topography and its elevation is in a range of 2 to 4m.

It is about 7 km away from the shoreline but was also hardly hit by the 2004 disaster. Unlike the Ulee Lheue area, there might be no serious geographic change in this area. Figure 5.3.1 presents the aerial view of the area after the 2004 disaster.



Source: BAC Aerial Photography (before and after tsunami

Figure 5.3.1 Aerial View of Peunayong Area after Disaster

(2) Land use

The Peunayong area has been built up mainly for commercial purpose. It faces with the Aceh River on its east and includes a military complex at the southern corner of the area, a small pier for fishing boats and a fish market, all facing to the Aceh River. The proposed area is the old town of BAC.

Owing to the powerful earthquake and following tsunami, a number of houses were collapsed and/or seriously damaged. According to the report, approximately 80 % of the houses, 20 % of retail shops and 50 % of the social and government offices were suffered from damages of various degrees.

(3) Socio-economic condition

(a) Population

According to Kuta Alam District, the pre- and post- disaster population are 4,382 and 2,858 respectively. The figures indicate that approximately 30 % of the inhabitants were perished by the disaster.

Population during the planning horizon was forecast as given in Table 5.3.1.

Table 5.3.1 Projected Population for Peunayong Model Area

Village	Projected Population					
	2005	2006	2007	2008	2009	2015
Peunayong	2,858	2,872	2,887	2,903	2,919	4,141

Source: The Additional Study team

(b) Economic activity

Wholesale and retail sales of various kinds are the predominant economic activity, followed by fish trade and its related activity.

Because of damages in fishing piers and market, trade volume has been reduced, resulting in causing economic impact on many people, especially vulnerable people.

5.3.2 Rehabilitation Program and Ongoing Works

As the same as the Ulee Lheue area, various rehabilitation programs have been placed and implemented by the government, donors and NGOs. Such programs are as summarized in Table 5.3.2.

Table 5.3.2 Sector Program and Executing Body

No	Programs	Funding	Executor	Status
I	Housing Reconstruction	NGO's, BRR, P2KP	NGO's, BRR, P2KP & community	Partly in progress
II	Road rehabilitation	BRR	BAC	In progress
III	Drainage rehabilitation	China, BRR	BAC	In progress
IV	Solid waste rehabilitation	BRR	BAC	In progress
V	Water supply rehabilitation	BRR, PDAM, Japan	PDAM JICS	In progress
VI	Utilities Network Rehabilitation	BRR, PLN, TELKOM	PLN, TELKOM	In progress
VII	Traditional Market	Japan, USAID	BAC	In progress
	Fishery Pier/Port Rehabilitation	CHF	BAC	In progress
	Fish Auction Rehabilitation	CHF	BAC	In progress
	Water tide Reconstruction	BRR	BAC	In progress

Source: The Additional Study team

5.3.3 Development Need and Constraint

In principle, need of rehabilitation and reconstruction is common with the Ulee Lheue area. There is however a couple of issues specific in this area. That is need in provision of operating capital, tools and equipment for retail business and fishing related people. Construction of houses and rehabilitation of fishing peirs and market are matter of urgent to sustain the livelihood of the vulnerable people.

The area shows of fully built-up state and therefore land resources appear to be constraint for construction of facilities necessary for disaster mitigation and other new infrastructure. It would be necessary to provide a special program such as micro financing scheme to support the people who are in need of financial support in order to make their business more vital.

5.3.4 Preliminary Development Plan and Cost Estimate

(1) Preliminary development plan

In compliance to RTRW and structure plan of URRP, it is intended to maintain the present urban function of the area, being commercial center within BAC. This model area is proposed to be re-vitalized with the following themes:

(1) Riverfront area

(2) China town area (old town)

(3) Military complex (existing)

(4) City park (to be used as emergency relief/evacuation area)

(5) Business district (hotel, office, retail and traditional commercial area)

(6) Residential area (combined with shop)

Given the above development themes, a development concept is draw down as shown in Figure 5.3.2, and then a preliminary development plan is elaborated as given in Figure 5.3.3. Also a detailed plan of evacuation road system is prepared to facilitate the BAC government for its prompt implementation as shown in Figure 5.3.4, subject to further review and study prior to implementation in due consideration of the latest circumstances.

(2) Outlines of reconstruction works

The preliminary development plan will include the following proposed reconstruction works:

(a) Houses for affected peoples

(b) Improvement of infrastructure such as road, pipe water supply, storm water drainage

(b) Landscaping including city park, emergency supply facility, disaster warning system

(c) Formation of riverfront

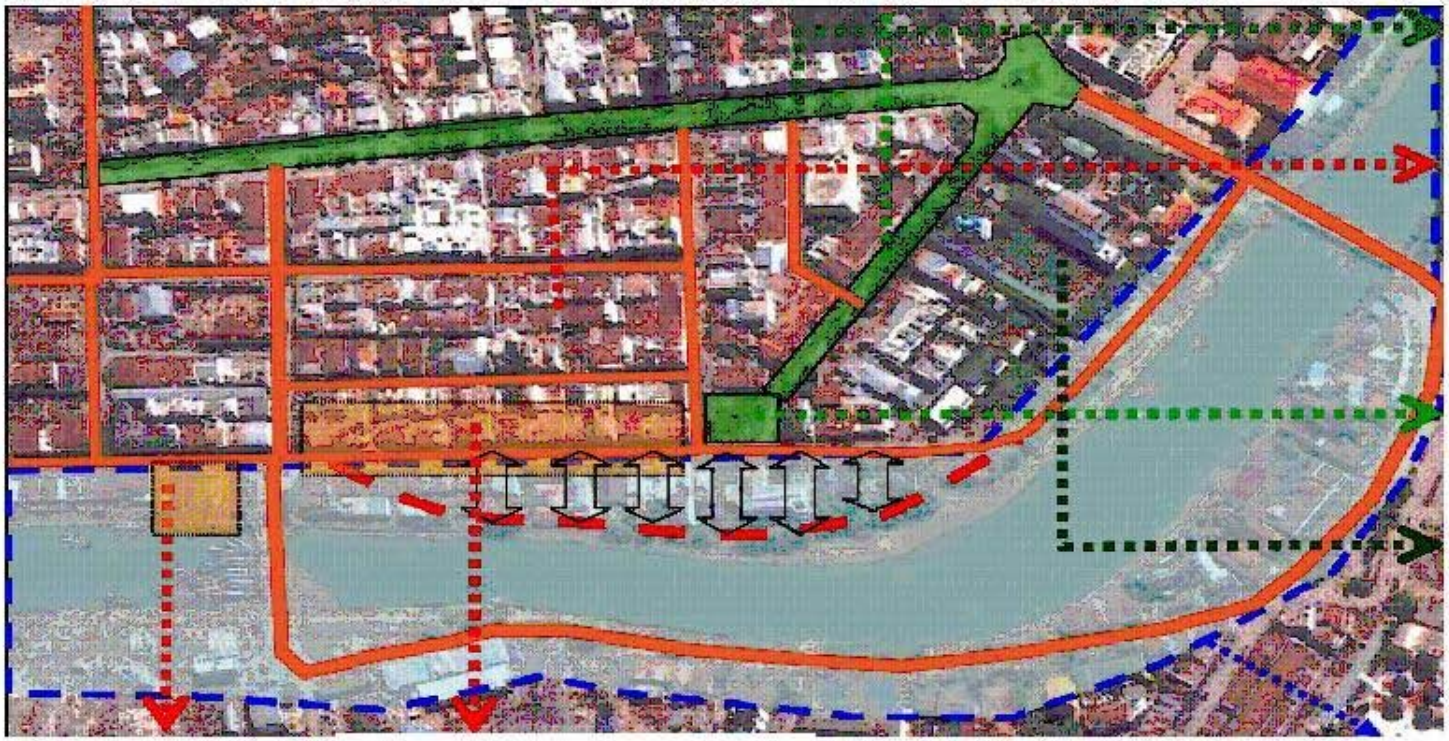
(3) Cost estimate

Cost for construction of various works has been roughly estimated as given in Table 5.3.3, under the same condition as those of the Ulee Lheue area.

Table 5.3.3 Indicative Cost Estimate and Construction Period

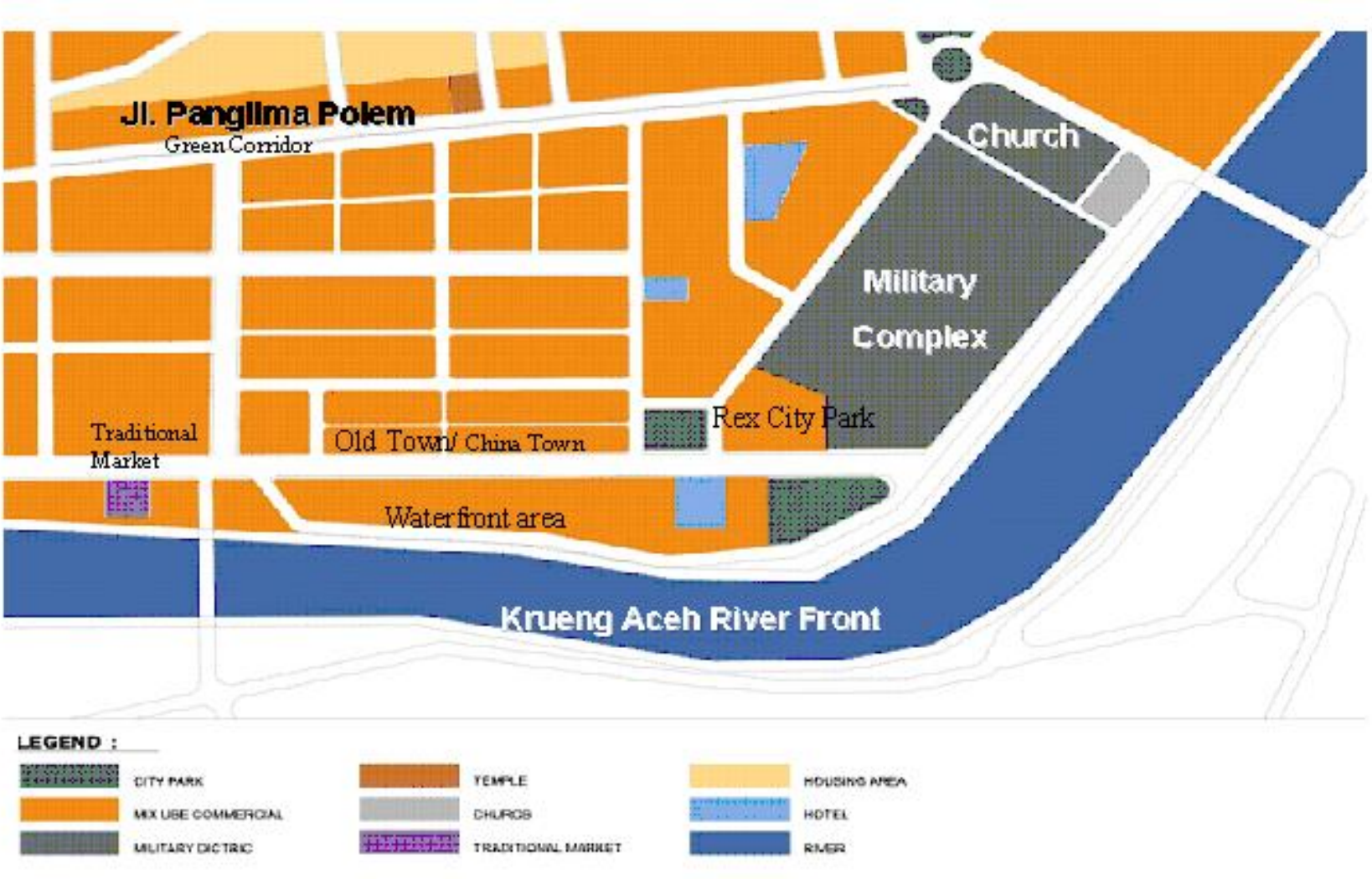
No	Programs	Volume	Cost Estimation (Rp. billion)
I	Housing	39 units	1.95
II	Infrastructure and Utilities:		
	• Road	3,387 m	3.14
	• Drainage	6,768 m	2.37
III	Public and Social Facilities	6,500 m^2	4.93
	Total		12.39

Source: The Additional Study Team



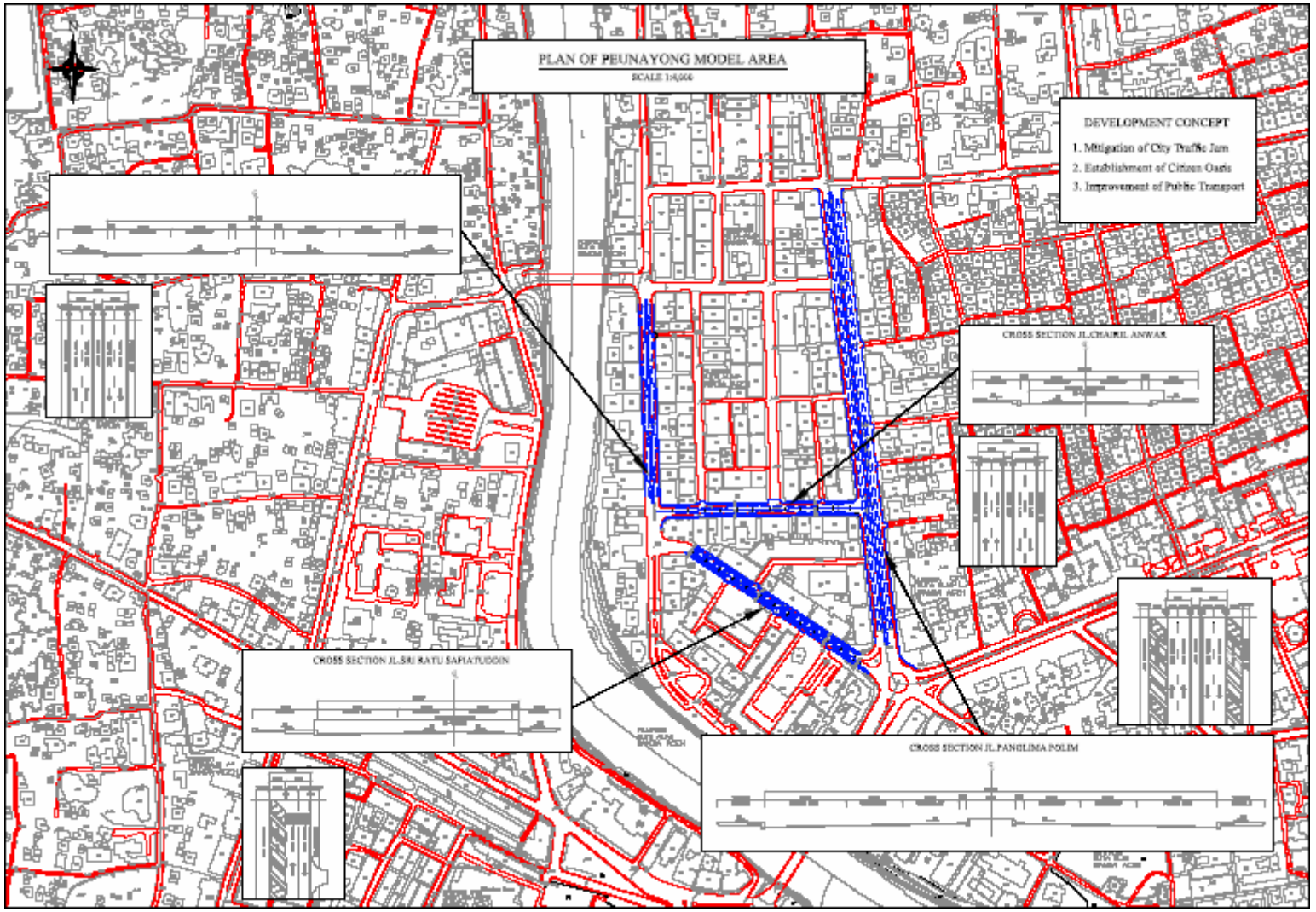
Source: The Additional Study Team

Figure 5.3.2 Development Concept for Puenyong Area



Source: The Additional Study Team

Figure 5.3.3 Preliminary Development Plan of Puenayong Area



Source : The Additional Study Team

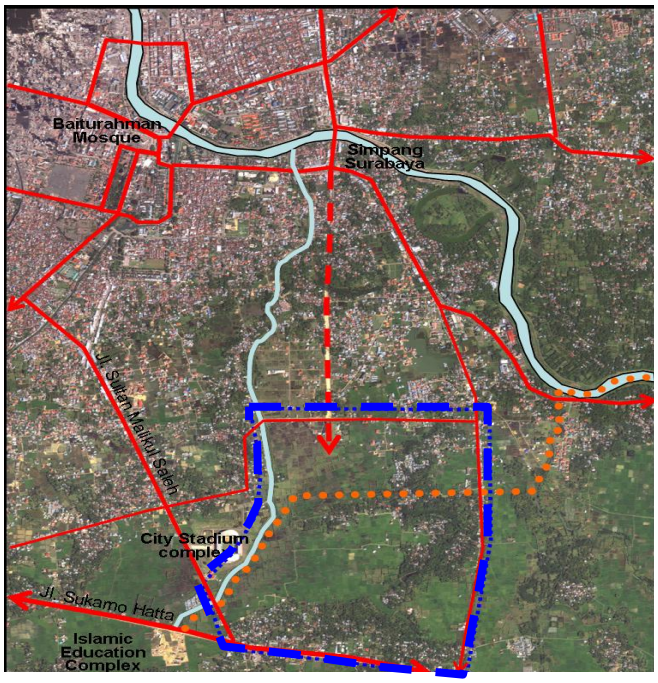
Figure 5.3.4 Preliminary Alignment Design of Evacuation Road in Peunayong Area

5.4 LUENG BATA MODEL AREA

5.4.1 General Condition

(1) Location

The aerial view of this model area is shown in Figure 5.4.1



Source: The Additional Study Team

Figure 5.4.1 Aerial View of Leng Bata Area

The area lies across the southern border of BAC and consists of administrative areas of Penjeurat and Lamdom Villages in Lueng Bata District in BAC and part of Aceh Besar Regency. It covers the area of 338 ha and has slightly undulating hilly topography. There is no damage by the 2004 disaster in this area.

(2) Land use

The cultivation area is the predominant, though there are residential area, public and social facilities and sport facility.

Keeping pace with growth in population in BAC, there has been increasing demand in the area for residential plot development and presently such development is implemented without proper control and attention to the environment.

URRP has proposed to assign this area into residential area as a acceptable of increasing of population in BAC.

(3) Socio-economic condition

(a) Population

According to the report of Lueng Bata District, population in Lamdom and Batoh villages were 1,625 and 3,769 respectively for the post-disaster situation, and it is reported that the

number of casualties was only 2 and 23 respectively for Lamdom and Batoh villages. But the population was suddenly increased in 2005 owing to influx of dislocated people from the affected areas.

Future population in the area is forecast at assumed average growth rate of 3 percent per annum as shown Table 5.4.1.

Table 5.4.1 Projected Population of Lueng Bata Model Area

Village	Projected Population					
	2005	2006	2007	2008	2009	2015
Lamdom	1,625	2,415	3,240	4,093	5,058	7,174
Batoh	4,521	5,640	6,863	8,212	9,830	13,944
Total	6,146	8,055	10,103	12,305	14,888	21,118

Source: The Additional Study Team

(b) Economic activity

The agriculture and its related activity are predominant in the economy of the area, though there is a number of retail shops to meet daily demands of the inhabitants.

5.4.2 Rehabilitation Program and Ongoing Works

The condition and status of rehabilitation program of Lueng Bata area is shown in Table 5.4.2.

Table 5.4.2 Sector Program and Executing Body

No	Programs	Funding	Executor	Progress
I	Housing scheme for dislocated people	Budha Tzuchi	NGO, community	Completed
II	Construction of new road and drainage New Road (Simpang Surabaya)	Government	Province Government	In progress
III	Road and Drainage Rehabilitation and Reconstruction	BRR, BAC	BAC	In progress
IV	Construction of Islamic Model Facility	Turkey	Turkey	In progress

Source: Additional Study Team

5.4.3 Development Need and Constraint

This contemplated area is quite different from the other two areas in terms of development need. The Ulee Lheue and Peunayong areas had been devastated by the 2004 disaster and therefore there are serious needs of the rehabilitation and reconstruction for many sectors, including support to the vulnerable and affected people. And in fact there have been established a number of programs in the Ulee Lheue and Peunayong Areas and many rehabilitation works have been completed and/or in progress as afore-mentioned. During the immediate relief stage the Lueng Bata area had acted as relief services area and thereafter a housing scheme was launched to receive the dislocated people who wish not to return to their original land and new comers.

The area is still blessed with rich vegetation and is supposed to be one of the sources of food supply.

Uncontrolled development of the area would result in causing serious natural and social environment impacts in future. It is not constraints but future development of the area be implemented under the proper control and regulation.

5.4.4 Preliminary Design and Cost Estimate

(1) Preliminary Development Plan

As aforementioned the Lueng Bata area will act as a receptacle of influx of population from BAC, probably resulting in causing burden on housing demand in future and land resources. In addition it is expected that some government offices would move there in future. The area is proposed to be developed with the following themes, subject to further study in due time:

(a) Main green corridor

(b) Forest and city park

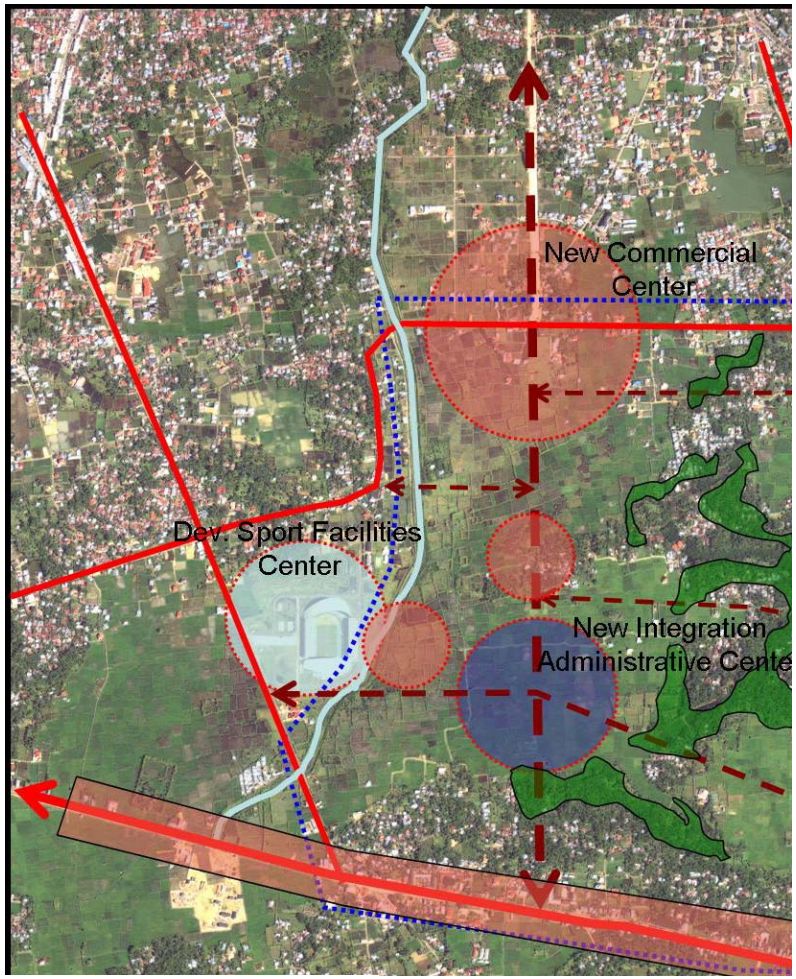
(c) Green belt

(d) Low density residential area

(e) Green central business district

(f) Government office and public services

The above development concept is plotted on the aerial photograph as shown in Figure 5.4.2, which is then developed into the plan as shown in Figure 5.4.3.



Source: The Additional Study team

Figure 5.4.2 Development Concept for Lueng Bata

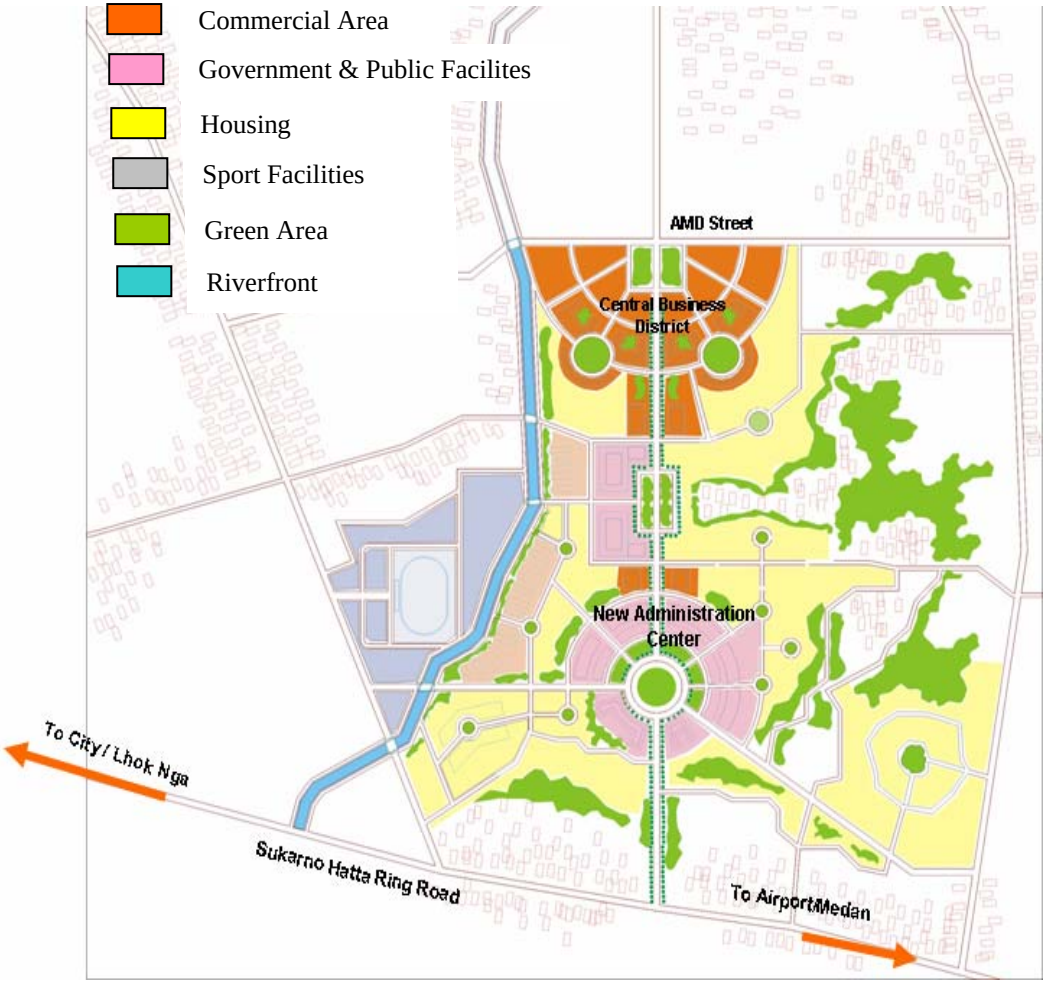


Figure 5.4.3 Preliminary Development Plan of Lueng Bata

(2) Outlines of Construction Works

The development of the Lueng Bata area would require construction of various new facilities as outlined here below:

(a) Development of residential area

(b) Construction of infrastructure such as roads, pipe water supply, electric power supply, storm water drainage, etc.

(c) Formation of water front area

(d) Landscaping including parks and greenbelt

(e) Government office and other public facilities as required

(f) Provision of disaster mitigation and emergency facilities such as water supply tank, disaster warning system

(3) Cost Estimate

The construction cost for the proposed development is roughly estimated as given in Table 5.4.3, under the same conditions as those of the Ulee Lheue area.

Table 5.4.3 Indicative Cost Estimate and Construction Period

No	Programs	Volume	Cost Estimation (Rp. billion)
I	Infrastructure and Utilities:		
	• Road	12,229 m	59.98
	• Drainage	24,454 m	35.46
II	Public and Social Facilities	42,000 m^2	51.74
	Total		147,18

Source: The Additional Study Team

CHAPTER 6 SHORT, MEDIUM AND LONG TERM PROGRAMS FOR REHABILITATION AND RECONSTRUCTION WORK IN BAC

The Final Report (1) of URRP provides the overall implementation plan for rehabilitation and reconstruction works in BAC. This plan actually categorizes all the rehabilitation and reconstruction work into (i) rehabilitation stage (2005-2006), (ii) reconstruction stage (2007-2009) and long term plan stage (2010-2015).

Under the Additional Study, the infrastructure development plan is updated and extended up to the target year 2015 as reported in Section 4.6 of this report. The construction cost is reviewed to absorb the modification and the latest situation, and implemented plan is also updated in the light of the prevailing situation and degree of urgency. And it is defined that the short term, medium and long term programs cover a two-year period from 2005 to 2006, a three-year period from 2007 to 2009 and a 5-year period from 2010 to 2015 respectively.

The annual fund requirement is then worked out on the basis of the preliminary cost estimate and tentative construction time schedule as presented in Table 6.1.

The fund requirement is estimated to be approximately Rp. 3,141billion during the short term program, Rp. 3,074 billion during the medium term program and Rp. 2,034 billion during the long term program.

Table 6.1 Annual Fund Requirement

(Unit : Billion Rp.)

ITEM	Short Term		Medium term			Long term						Total
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
A. Housing												
Sub Total	124.90	223.49	223.49	145.79	145.79							863.46
B. Electricity and Communication												
Sub Total	325.65	325.65	427.05	427.05	427.05	130.00	130.00	130.00	130.00	130.00	130.00	2,712.45
C. Water Supply												
C.1. Programs												
C1-1. Banda Aceh Water Supply master Plan 2007-2020		3.14										3.14
C1-2. PDAM Corporate Plan 2005-2009	0.33											0.33
C1-3. Capacity Building Program	1.33	1.93	0.92	0.76	0.76							5.70
C.2. Construction Works												
C2-1. PDAM Administrative Facilities	7.87	0.25	4.68									12.80
C2-2. Rehabilitation of Lambaro (435l/s) waterTratment Plant	4.15	10.27										14.42
C2-3. Rehabilitation Of Water Didtribution System	14.32	72.29	1.04									87.65
C2-4. Expansion of Lambaro Water Tretment Plant			3.00	7.00	8.00	3.67						21.67
Sub Total	28.00	87.88	9.64	7.76	8.76	3.67	0.00	0.00	0.00	0.00	0.00	145.71
D. Sanitation and Drainage												
D.1. Drainage												
D1-1. Urgent Rehabilitation Works	32.57	65.14	32.57									130.28
D1-2. Rehabilitaiton Works		14.82	34.58									49.40
D1-3. Reconstruction Works			35.59	71.19	71.19							177.97
D1-4. Dykes and Fooldwall	28.50	66.50										95.00
D1-5. Flood canalplan in the south part of BAC						0.02	0.01	0.02	0.01	0.00	0.03	0.09
D1-6. River normalization						0.01	0.02	0.01				0.03
D.2. Sanitation												
D2-1. Recovery of existing septage Plant (IPLT)	7.98											7.98
D2-2. Additional Septage Treatment Plant		2.78	4.16									6.94
D2-3. Procurement of Vacuum cars		1.69	1.69	1.69								5.07
D2-4. Sewerage Development				6.74	15.00	20.00	20.00	25.00	30.00	30.00	30.00	176.74
D.3. Solid Waste Management												
D3-1. Construction of new Landfill Site (TPA)		103.26		103.26								206.52
D3-2. Packer and Dump Trucks		0.99		0.99	0.99		0.99					3.96
Sub Total	69.05	255.18	108.59	183.87	87.18	20.03	21.02	25.03	30.01	30.00	30.03	859.98
E. Road and Transport												
E.1 Road												
E1-1. Rehabilitation of arterial roads and bridges	37.99	37.99										75.98
E1-2. Rehabilitation of Sub-arterial and other roads	271.61	271.61										543.22
E1-3. Construction of coastal road						82.00	82.00	83.00				247.00
E1-4. Extension of Jl. Syiah Kuala										21.93	21.94	43.87
E1-5. Improvement of existing road for escape road			19.74									19.74
E1-6. Construction of new arterial roads									66.74	66.74	66.74	200.22
E.2 Traffic Management												
E2-1. Reconstruction of traffic management systems				4.15								4.15
E2-2. Improvement of signals						9.20						9.20
E.3 ROAD TRAFFIC FACILITIES												
E3-1. Reconstruction of bus terminal			31.69	31.70								63.39
E3-2. Provisional of bus terminal, inspection center and truck terminal										46.61	46.60	93.21
E.4 FERRY TERMINAL												
E4-1. Reconstruction of ferry terminal			22.53	22.53	22.54							67.60
Sub Total	309.60	309.60	73.96	58.38	22.54	91.20	82.00	83.00	66.74	135.28	135.28	1,367.58
F. Health												
F.1. Improvement of environmental health	5.30	10.50	10.50	10.50	10.50	2.10	1.80	1.80	1.80	1.80	1.80	58.40
F.2. Basic health services / Referral services	117.70	118.20	3.60	2.20	2.20	2.10	1.80	1.80	1.80	1.80	1.80	255.00
F.3. Infectious diseases prevention and control	2.80	6.80	4.00	0.70	0.50	0.49	0.48	0.47	0.46	0.45	0.45	17.60
F.4. Preparation of medicine and medical supply	0.40	0.60										1.00
F.5. Dispatching health personnel and revitalization of education facilities	6.60	9.50	10.40	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	94.50
F.6. Improving health Development policy and management	2.80	4.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.50	19.90
F.7. Revitalization of drug and food security function	8.10	16.40	0.50	0.50	0.50							26.00
F.8. Emergency Health and Medical Services	6.10	8.40	6.10	0.50	0.50	0.90	0.90	0.50	0.50	0.50	0.50	25.40
Sub Total	149.80	174.80	36.50	24.30	24.10	15.49	14.88	14.47	14.46	14.45	14.55	497.80
G. Education												
G.1. School Building, Classroom, Furniture and Material												
G1-1. Rehabilitation of damaged schools	153.00	307.00										460.00
G1-2. Providing emergency school classrooms	14.00	47.00										61.00
G1-3. Providing school furniture and materials	11.00	11.00										22.00
G1-4. Reconstruction of schools			116.00	91.00	34.00	5.00	4.00	4.00	4.00	4.00	4.00	266.00
G.2 Employment of Teacher												
G2-1. Recruiting temporary teachers	25.00	8.00										33.00
G2-1. Recruiting permanent teachers			2.00	2.00	2.00							6.00
G.3 Scholarship												
G3-1. Providing scholarship, consulting traumatized students	36.00	9.00										45.00
G3-2. Providing scholarship			6.00	4.00	4.00							14.00
G.4 Capacity Building and Institutional Arrangement												0.00
G4-1. Developing teaching capacity			10.00	4.00	3.00							17.00
G4-2. Improving non-formal education			1.00	1.00	1.00							3.00
G4-3. Developing school management			14.00	14.00	14.00							42.00
Sub Total	239.00	382.00	149.00	116.00	58.00	5.00	4.00	4.00	4.00	4.00	4.00	969.00
H. Disaster Preparedness												
H.1. Structural Measure												
H1-1. Detached Breakwater					46.59	43.27	43.27					133.13
H1-2. Seawall			14.62	14.62	14.62	14.62	14.62					73.10
H1-3. Coastal Forest	2.97	2.97	2.97	2.97	2.97							14.86
H1-4. Tidal Gate						5.90	9.00	11.00	12.00	12.00	12.00	61.90
H.2. Public Facility												0.00
H2-1. Escape Building	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58		25.80
H2-2. Escape Tower			0.62									0.62
H2-3. Emergency Base and Open Space			12.90	18.06	5.16	5.16	5.16					46.43
H.3. Warning and Dissemination System												
H3-1. Seismometer/Warning Siren/Mobile Phone System	3.10	3.10	6.19	6.19	2.06							20.63
H3-2. Tsunami Watch					3.10							3.10
F3-3. GPS System/Disaster Mitigation Database						7.74	7.74					15.48
H.4. Public Education and Disaster Awareness												
H4-1. Mass Media	0.93	0.93	0.93	0.93	0.93	0.93	0.93					6.50
H4-2. GIS	2.10	2.10	2.10	2.10	2.10	2.10	2.11					14.73
H4-3. Public Facilities	0.62	0.62	0.62	0.62	0.62	0.62	2.38	3.00	5.00	5.00	5.87	24.97
F4-4. Monument including City Parks								16.00	16.00	16.00	16.23	64.23
H4-5. Drill for Escape	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.20				1.44
Sub Total	12.50	12.50	43.74	48.27	80.94	82.92	88.00	32.78	35.58	35.58	34.10	506.92
J. Public Market, Government Building, Religious Building												
Sub Total	52.26	59.80	45.50	45.50	45.50	26.00	26.00	26.00				326.56
TOTAL	1,310.76	1,830.90	1,117.47	1,056.92	899.86	374.31	365.90	315.28	280.79	349.31	347.96	8,249.45

: Cost and Schedule same as Original JICA URRP Study Report 2005
: Review of a schedule, cost is same as Original JICA URRP Study Report
: Proposed of Additional study 2006

CHAPTER 7 CONSULTATION AND ASSISTANCE TO BAC GOVERNMENT

One of the important objectives of the Additional Study on URRP is to provide the Banda Aceh City government with consultation and assistance to expedite the process of the rehabilitation and reconstruction program which will include the structure plan with a long term vision. In compliance with this objective a team of the Additional Study has organized a meeting with the city government and the other government offices concerned over 6 times in the course of the study. The outlines of these meetings are summarized in Table 7.1.

Table 7.1 Outlines of Meeting with the City Government

	Date	Venue	Counterpart	Main Subjects
1	Oct 19, 2005	Bappeda, Province	BRR, PU Jakarta and Dinas, Mayor of BAC, Bappeda Province, Dinas Tata Kota, JICA Study Team	➢ Presentation of Inception Report for Additional Study
2	Nov. 9, 2005	Bappeda, City	PU Jakarta and Dinas, Bappeda city, Dinas Tata Kota	➢ Spatial plan ➢ Integration of Additional Study with micro plan being prepared by PU Jakarat
3	Dec. 20, 2005	Governor's Office	BRR, JICA Indonesia, Embassy of Japan, JICS, Mayor of BAC, City Bappeda, Dinas staff of city govn., Other organizations	➢ Presentation of progress of and interim results of the Additional Study
4	Jan. 18, 2006	Mayor's Office	BRR, Bappeda City, PU dinas, Dinas Tata Kota, Mayor of BAC	➢ BAC metropolitan concept ➢ BAC development concept and structure plan ➢ Concept on 3 reconstruction models
5	Jan. 20, 2006	Bappeda Province	MOE, BRR, BAC Parliament, Bappeda Province, Mayor of BAC, PU Dinas, Bappeda City, Dinas Tata Kota	➢ 3 reconstruction model planning ➢ Structure plan and development concept
6	Feb. 9, 2006	Bappeda City	PU Jakarta and Dinas, Bappeda City, Dinas tata Kota,	➢ Outlines of draft final report ➢ Spatial plan in context of national standard ➢ Legal aspect of BAC master plan being assisted by PU Jakarta
6	Feb. 16, 2006	Pendopo	BRR, DPR, DPRD, governor	➢ Tourism development of Ulee Lheue