

JICA STUDY TEAM FOR  
URGENT REHABILITATION AND RECONSTRUCTION PLAN  
FOR BANDA ACEH CITY

**THE STUDY  
ON  
THE URGENT REHABILITATION AND RECONSTRUCTION  
SUPPORT PROGRAM**

**FOR  
ACEH PROVINCE AND AFFECTED AREAS  
IN NORTH SUMATRA**

**(URGENT REHABILITATION AND RECONSTRUCTION PLAN  
FOR BANDA ACEH CITY)**

**IN THE REPUBLIC OF INDONESIA**

**FINAL REPORT  
VOLUME II : APPENDIX  
FOR  
ADDITIONAL STUDY  
ON  
URRP**

**FEBRUARY 2006**



**PT WISWAKHARMAN**



LOCATION MAP OF BANDA ACEH CITY

**FINAL REPORT  
VOLUME II : APPENDICES  
FOR  
THE STUDY  
ON  
THE URGENT REHABILITATION AND RECONSTRUCTION PLAN  
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**ADDITIONAL STUDY ON URRP  
(ANNEX)**

**FEBRUARY 2006**

LOCATION MAP OF BANDA ACEH CITY

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## ABBREVIATIONS

ADB	Asian Development Bank
AIPRD	Australia-Indonesia Partnership for Reconstruction and Development
AMDAL	Environmental Impact Assessment <i>Analisis Mengenai Dampak Lingkungan</i>
ANDAL	Environmental Impact Statement <i>Dokumen Analisis Dampak Lingkungan</i>
ARF	Aceh Recovery Forum
ARI	Acute Respiratory Infection
ARRIS	Aceh Rehabilitation and Reconstruction Information System
AusAID	The Australian Agency for International Development
BAPEL	Rehabilitation and Reconstruction Executing Agency <i>Badan Pelaksana Rehabilitasi dan Rekonstruksi</i>
BAPPENAS	National Development Planning Agency <i>Badan Perencanaan dan Pembangunan Nasional</i>
BAPPEDA	Regional Development Planning Agency <i>Badan Perencanaan Pembangunan Daerah</i>
BAPEDALDA	Regional Environmental Impact Management Agency <i>Badan Pengendalian Dampak Lingkungan Daerah</i>
BPOM	Drug and Food Control Center <i>Badan Pengawasan Obat dan Makanan</i>
BCPR	Bureau for Crisis Prevention and Recovery
BPN	National Land Agency <i>Badan Pertanahan Nasional</i>
BPS	National Statistics Bureau <i>Badan Pusat Statistik</i>
BRR	Rehabilitation and Reconstruction Agency for Aceh and Nias <i>Badan Rehabilitasi dan Rekonstruksi NAD-Nias</i>
CBD	Central Business District
CEIC	Center for the Study of Education in an International Context
CEP	Community Empowerment Program
CHO	City Health Office
CGI	Consultative Group on Indonesia
Desa	Village
DFID	The United Kingdom Department for International Development
DKP	Department of Sanitary and Park <i>Dinas Kebersihan dan Pertamanan</i>
DOTS	Direct Observation and Treatment, Short Term
DPU	Department of Public Works <i>Dinas Pekerjaan Umum</i>
DTM	Digital Topographic Map
EDB	Education Department of Banda Aceh City
EDNP	Education Department of NAD Province
EIA	Environmental Impact Assessment (AMDAL)
EIS	Environmental Impact Statement (ANDAL)
EOJ	Embassy of Japan



EPI	Expanded Immunization Program
ERTR	Emergency Response and Transitional Recovery
ETESP	Earthquake and Tsunami Emergency Support Project
GIS	Geographical Information System
GNI	Gross National Income
GOI	Government of Indonesia
GOJ	Government of Japan
GTZ	German Technical Cooperation Agency <i>Deutsche Gesellschaft für Technische Zusammenarbeit</i>
GRDP	Gross Regional Domestic Product
HIC	UN Human Information Centre
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
IATPI	Indonesian Society of Sanitary and Environmental Engineers <i>Ikatan Ahli Teknik Penyehatan dan Teknik Lingkungan Indonesia</i>
IDPs	Internal Displaced Peoples
IDPC	Internal Displaced Peoples' Camps
IFRC	International Federation of Red Cross and Red Crescent Societies
INGO	International Non Governmental Organization
ILO	International Labor Organization
IMR	Infant Mortality Rate
IPLT	Human Excrement Treatment Plant
IOM	International Organization for Migration
IRD	International Relief and Development
JICA	Japan International Cooperation Agency
JICS	Japan International Cooperation System
Kabupaten	District
Kecamatan	Sub-district
Kota	City/ Municipality
LGSP	Local Government Support Project
LGU	Local Government Unit
LPMP	Quality Assurance in Education Institution <i>Lembaga Penjamin Mutu Pendidikan</i>
LSM	Non Governmental Organization <i>Lembaga Swadaya Masyarakat</i>
MA	Islamic Senior High School <i>Madrasah Aliyah</i>
MOC	Ministry of Communication
MCK	Communal toilet/ bath facility <i>Mandi Cuci Kakus</i>
MDGs	Millennium Development Goals
MI	Islamic elementary school <i>Madrasah Ibtidaiyah</i>
MMR	Maternal Mortality Rate
MOH	Ministry of Health
MONE	Ministry of National Education
MORA	Ministry of Religion Affairs

MOU	Memorandum of Understanding
MPU	Muslim Leader Consultative Council <i>Majelis Permusyawaratan Ulama</i>
MT	Islamic Junior High School <i>Madrasah Tsanawiyah</i>
NAD	Nanggroe Aceh Darussalam
NGO	Non Governmental Organizations (LSM)
O&M	Operation and Maintenance
PALYJA	Water Company of Jakarta City <i>PT PAM Lyonnaise Jaya</i>
PAUD	Early Age Children Education Institution <i>Pendidikan Anak Usia Dini</i>
PDAM	Water Supply Authority <i>Perusahaan Daerah Air Minum</i>
PEQIP	Primary Education Quality Improvement Project
PHO	Provincial Health Office
PKBI	Indonesia Planned Parenthood Association (NGO) <i>Perkumpulan Keluarga Berencana Indonesia</i>
PKBM	Community Learning Center <i>Pusat Kegiatan Belajar Masyarakat</i>
PMI	Red Cross Indonesia <i>Palang Merah Indonesia</i>
Propinsi	Province
Posyandu	Integrated Health Service Post <i>Pos Pelayanan Terpadu</i>
PSDAK	Road and Water Resources Department, Banda Aceh City <i>Dinas Prasarana Jalan dan Sumber Daya Air Kota Banda Aceh</i>
PTSD	Post Traumatic Stress Disorder
PU	Ministry of Public Works <i>Departemen Pekerjaan Umum</i>
PVC	Polyvinyl chloride
QIP	Quick Impact Project
RA	Islamic kindergarten <i>Raudatul Athfal</i>
RDB	Religion Department of Banda Aceh City
RDNP	Religion Department of NAD Province
REDIP	Regional Education Development and Improvement Program
RRI	The State Radio of Indonesia <i>Radio Republik Indonesia</i>
RTRW	Revised Plan of Regional Space Layout <i>Rencana Tata Ruang dan Wilayah</i>
R3MAS	Rehabilitation and Reconstruction Plan for the People of Aceh & North Sumatra <i>Rencana Rehabilitasi dan Rekonstruksi Masyarakat Aceh &amp; Sumatra Utara</i>
SD	Elementary school <i>Sekolah Menengah</i>
SDC	Swiss Agency for Development and Cooperation
SETNEG	National Secretariat <i>Sekretariat Negara</i>

SMA	Senior High School <i>Sekolah Menengah Atas</i>
SMK	Senior Vocational High School <i>Sekolah Menengah Kejuruan</i>
SMP	Junior High School <i>Sekolah Menengah Pertama</i>
SPK	District Nursing School <i>Sekolah Perawat Kesehatan</i>
STI	Sexually Transmitted Infections
THW	German Federal Agency for Technical Relief <i>Technisches Hilfswerk</i>
TK	Kindergarten <i>Taman Kanak-kanak</i>
TLC	Temporary Location Center
TOR	Terms of Reference
TOT	Training of Trainers
TPA	Reading Al Qur'an Institution <i>Taman Pengaiaan Al-Qur'an</i>
TVRI	National Broadcast of Indonesia <i>Televisi Republik Indonesia</i>
UFW	Unaccounted for Water
UKL	Environmental Management Plan <i>Upaya Pengelolaan Lingkungan</i>
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UPL	Environmental Monitoring Plan <i>Upaya Pemantauan Lingkungan</i>
USACE	The United States Army Corps of Engineers
USAID	The US Agency for International Development
URRP	Urgent Rehabilitation and Reconstruction Plan
VCT	Volunteer Testing and Counseling
WB	World Bank
WHO	World Health Organization
WTP	Water Treatment Plant
YAB	(Acehnese NGO) <i>Yayasan Anak Bangsa</i>
YADESA	(NGO) <i>Yayasan Desa</i>
YASINDO	(NGO) <i>Yayasan Sinar Desa Indonesia</i>
YCDI	(Acehnese NGO) <i>Yayasan Citra Desa Indonesia</i>
YIPD	(Acehnese NGO) <i>Yayasan Inovasi Pemerintahan Daerah</i>
YNDN	(Acehnese NGO) <i>Yayasan Nandra Dian Nusantara</i>

## **APPENDIX A**

### **PRESENT CONDITION OF STUDY AREA**

## CHAPTER 1 LOCATION AND AREA

### 1.1 BAC

- 1) The Study Area covers the entire administrative area of Banda Aceh City (approximately 6,100 Ha) and its surroundings. Banda Aceh City is the capital of NAD and the center of commerce, education and culture of the province. The city comprises of 9 kecamatan (districts): Meuraxa, Baiturrahman, Kuta Alam, Ulee Kareng, Jaya Baru, Banda Raya, Lueng Bata, Syiah Kuala, and Kuta Raja.
- 2) The city faces to the Strait of Malacca on its north. Its topography is characterized by very flat with average elevation around two (2) meters above sea level.

### 1.2 ACEH BESAR REGENCY

- 1) The Study Area covers the entire administrative area of Aceh Besar Regency. It is located on 5.20-5.8 0 Northern Latitude and 95.00-95.80 Eastern Longitude (total area is 2,974.12 km<sup>2</sup>)
- 2) Aceh Besar Regency, whereas the preservation forest has the biggest area around 70% from the existing preservation area. Biggest half of the Aceh Besar Regency lay in land and the smallest area lay in islands. Aceh Besar Regency boundaries are as follows: North Malacca Strait and BAC, South Aceh Jaya Regency, East Pidie Regency, West Indonesian Ocean
- 3) Aceh Besar Regency consists of 22 districts, 596 villages.

### 1.3 SABANG CITY

- 1) Sabang City is located on 05046'28"-05054'28" Northern Latitude and 95013'02"-95022'36" Eastern Longitude. The total area of Sabang City is 153 km<sup>2</sup>.
- 2) Sabang City boundaries are as follows:
  - a. North : Malacca Strait
  - b. South : Indonesian Ocean
  - c. East : Malacca Strait
  - d. West : Indonesian Ocean
- 3) The area of Sabang City includes islands such as: Weh, Rubiah, Klah, Seulako and Rondo Islands.

Figure 1.1 Location of Study Area



Source: Additional Study Team, 2006

## CHAPTER 2 TOPOGRAPHY AND LAND USE

### 2.1 TOPOGRAPHY

- 1) BAC topography is dominated by lowland areas (0-3% slope gradient)
- 2) Aceh Besar, 44, 17% of Aceh Besar Regency has more than 40% slope class, beside that, 56.23 % from the Aceh Besar Regency total area has >90 cm density. For specific data are shown on table below:
- 3) Sabang City, The topography in Sabang City consist of  $\pm 3\%$  low density land,  $\pm 10\%$  wavy land,  $\pm 35\%$  hills, and  $\pm 52\%$  hills.

Figure 2.1.1 Topography Map BAC and Surrounding Area



Source: Additional Study Team, 2006

## 2.2 LAND USE

### Pre-Tsunami BAC

- 1) The majority of BAC is dominated by built area (80%). The rests are agricultural land consisting of paddy fields (7%) and dryland farming/garden (7%). Other land uses represents 4% of total area, fishponds 3%, swamp 0.1%. There is no forest whatsoever in BAC area.

Table 2.2.1 Area Percentage of Banda Aceh City Land Use

NO	LAND USE	AREA (HA)	%
1	Paddy fields	409.00	6.67%
2	Land for buildings	4,890.60	79.70%
3	dryland farming/garden	421.80	6.87%
4	Swamp	6.00	0.1%
5	Fishpond	168.00	2.74%
6	Forest	-	-
7	Others	240.50	3.92%
Total		<b>6,135.90</b>	<b>100%</b>

Source : BPS Banda Aceh, 2002

- 1) **Aceh Besar**, 49, 48 % size is the solid forest. Whereas for the industry and pond only 0, 03 % and 0, 14 % from the Aceh Besar Regency size, this also shows that industry and pond are very less for the land use in Aceh Besar Regency.

Table 2.2.2 Area Percentage of Aceh Besar Regency by Land Use, 2003

No	Land Use	Area Percentage (%)
1	Rural Areas	1.25
2	Industry	0.03
3	Mining	0.14
4	Cultivation	8.57
5	Dry Land Period Cultivation	0.19
6	Plant	3.66
7	Plantation	4.45
8	Grassy	19.11
9	Forest (solid, bush, or else)	49.48
10	Land River (Water tide, pond, salty, dike, swamp)	0.38
11	Open Land (dull, damage, land clearing)	12.36
12	River/Road	0.38

Source: Aceh Besar Dalam Angka, 2003

- 2) **Sabang City**, categorized in two areas, which is cultivated and non-cultivated area. Land Use for the cultivated area is 0,7% from the Sabang City total area, whereas land use for the non-cultivated area is 99,3% from the Sabang City total area which are consist of: Rural Areas 6,7% from Sabang city total area, Agriculture Land 9,5% from Sabang city total area, Farm Land 0,3% from Sabang city total area, Cattle/Ranch 0,2% from Sabang city total area, preservation forest 32% from Sabang city total area, tourism forest 9% from Sabang city total area, plantation 38% from Sabang city total area, swamp 0,2 % from Sabang city total area, fish pond 0,4% from Sabang City total area and others are 3% from Sabang City total area.



Table 2.2.3 Area Percentage of Sabang City by Land Use, 2003

No	Land Use Category	District (Ha)		%
		Sukajaya	Sukakarya	
1	Cultivated		10	0.7
2	Non-Cultivated			
3	· Rural Areas	622.00	412,00	6.7
4	· Agriculture Land	948.22	502.24	9.5
5	· Farm Land	28.00	19.00	0.3
6	· Cattle/Ranch	11.00	12.00	0.2
7	· Preserved Forest	2775.78	2157.26	32.0
8	· Tourism Forest		1413.50	9.0
9	· Plantation	3092.00	2667.00	38.0
10	· Swamp		40.00	0.2
11	· Fish Pond	42.00	22,00	0.4
12	· Others	241.00	245.00	3.0
<b>Total</b>		<b>7760.00</b>	<b>7490.00</b>	<b>100.00</b>

Source: Statistik Sabang, 2003

Figure 2.2.1 Existing Land Use in BAC

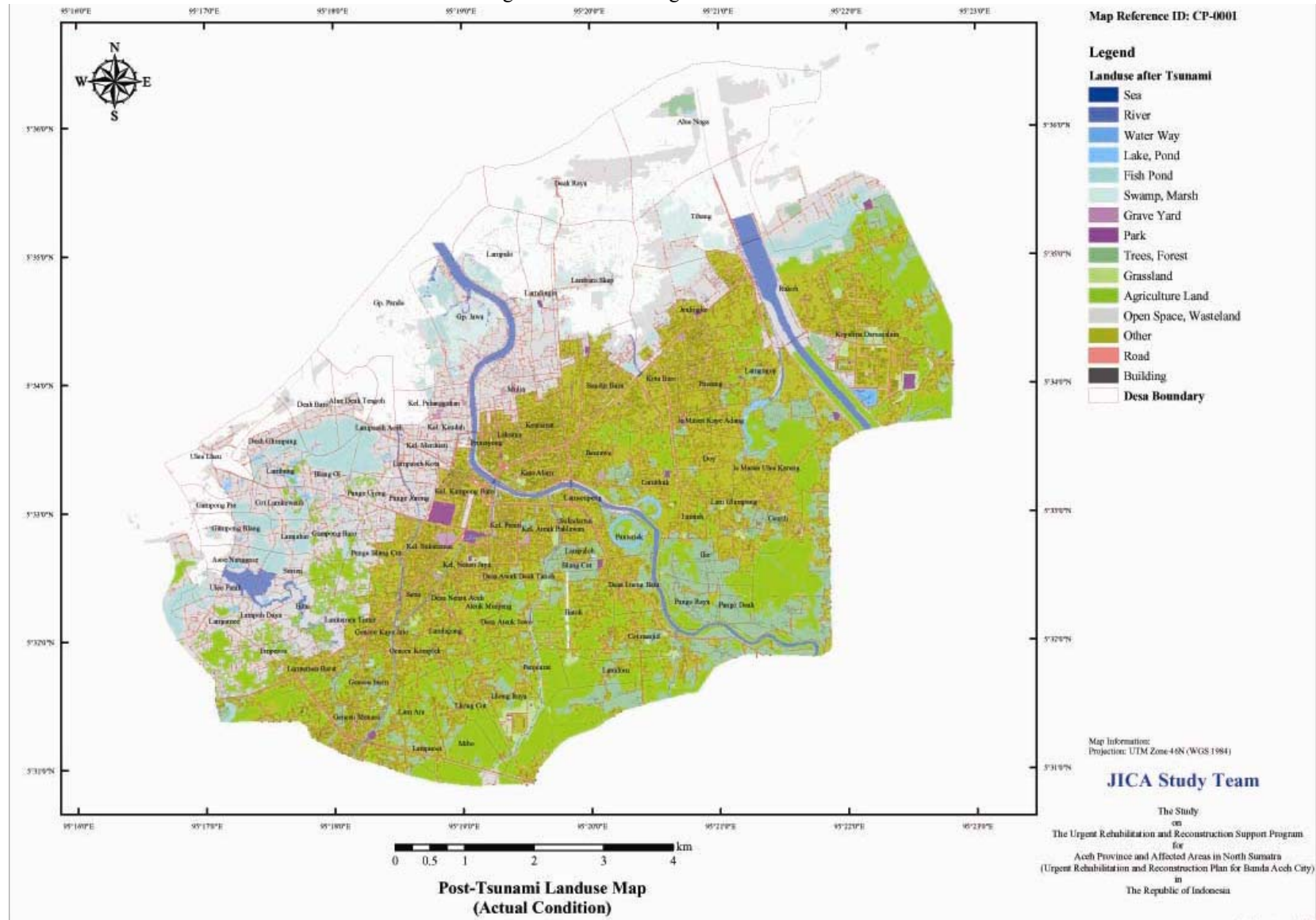
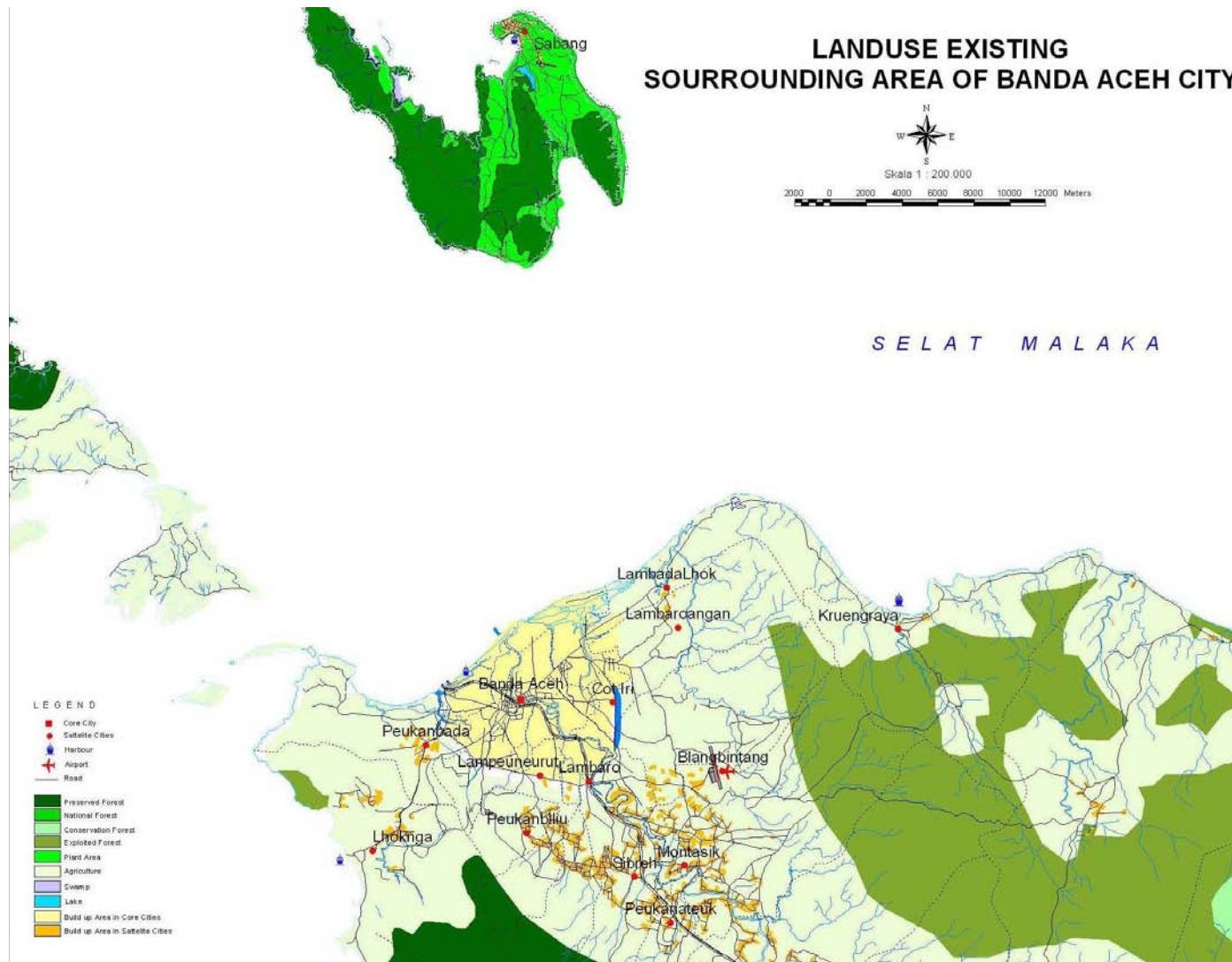


Figure 2.2.2 Existing Land Use of Surrounding Area of BAC

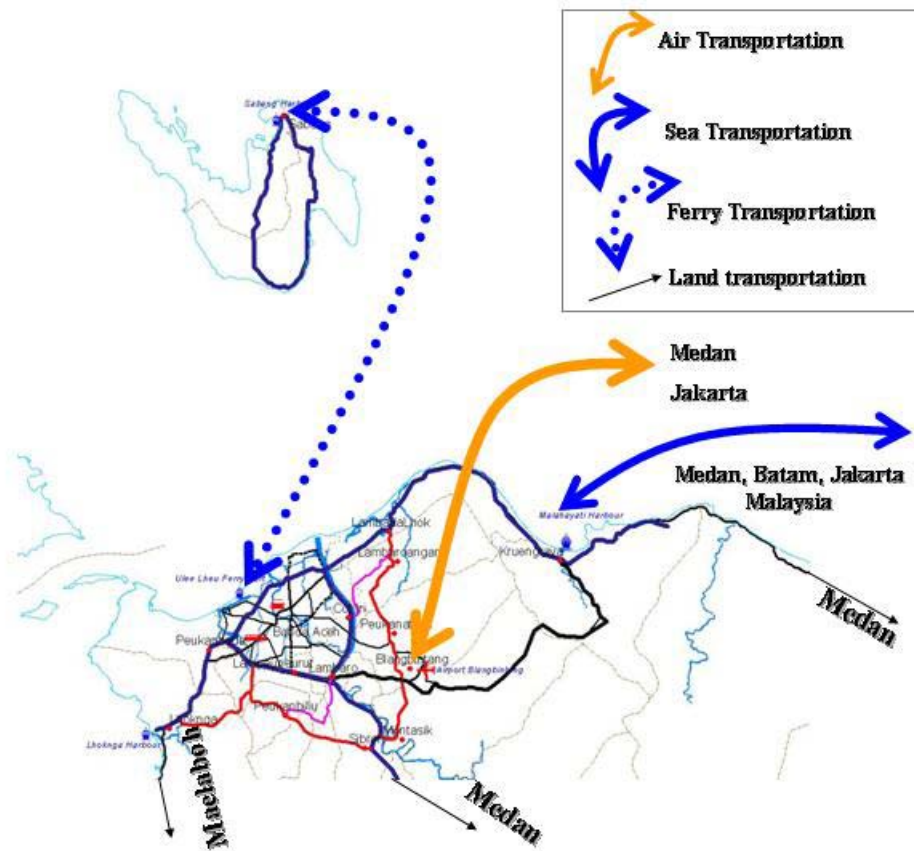


### 2.3 ACCESS TO THE STUDY AREA

In total there are three accesses to the study area: by ground transport, marine transport and air transport.

- 1) Ground access: BAC as the capital of NAD Province can be reached by road from Medan, through ± 650 Km of road, travel time ± 12 hours.
- 2) Marine access: the study area can be accessed from Malahayati Harbor, which offers regular sailing service from Jakarta, Batam and Medan.
- 3) Air access is provided by Sultan Iskandar Muda Airport, which offers regular flights from Jakarta, Medan, Batam, and Penang (Malaysia). At present there are four airlines offering a total of six flights per day.

Figure 2.3.1 Access to the Study Area



Source: Additional Study Team, 2006

There are two internal accesses within the study area: ferry service (linking BAC and Sabang) and ground access (serving BAC as Regional Center). The distance between BAC and Regional Centers is described in the following table and map.

Table 2.3.1 Distance between BAC and Regional Center

No	Kecamatan/City	Distance from BAC
		Km
1	Sabang	37
2	Lhoong	54
3	Lhoknga	16
4	Leupung	24
5	Indrapuri	25
6	Kuta Cot Glie	32
7	Seulimeum	42
8	Kota Jantho	52
9	Lembah Seulawah	77
10	Mesjid Raya	31
11	Darussalam	13
12	Baitussalam	11
13	Kuta Baro	12
14	Montasik	16
15	Inginjaya	8
16	Krueng Barona Jaya	8
17	Suka makmur	15
18	Kuta Malaka	19
19	Simpang tiga	18
20	Darul imarah	5
21	Darul kamal	8
22	Peukan bada	6
23	Pulo Aceh	30

Source: Aceh Besar Dalam Angka, 2003

## CHAPTER 3 POPULATION AND GROWTH RATE

### 3.1. POPULATION

#### A. BAC

The trend of population of Banda Aceh City during the period from 1999 to 2004 is as follows. The population was 265,097 in 2004. The steep increase between 2003 and 2004 was mainly attributed to migrant from the surrounding areas due to the civil conflict.

Table 3.1.1 Pre-Tsunami Population of BAC (1999-2004)

	Year					
	1999	2000	2001	2002	2003	2004
Population	216,289	220,737	223,223	225,996	223,829	265,097

Source: Statistik BAC dan NAD, 2004

In 2005 BAC population dropped drastically due to the earthquake and tsunami disaster. The decrease is approximately 64,254 people (around 24%). Therefore total BAC population in the beginning of 2005 is 200,843 people.

#### B. Aceh Besar Regency

In year 1999-2003, the populations in Aceh Besar Regency keep increasing from 287.886 persons (1999) to 301.727 persons (2003). Aceh Besar regency area having the biggest population in Darul Imarah District whereas Kuta Malaka District have the smallest population. For specific data are shown on table below:

Table 3.1.2 Population of Aceh Besar Regency by District, 1999-2004

DISTRICT	YEAR					
	1999	2000	2001	2002	2003	2004
LHOONG	11421	11472	11505	11444	11.592	11.585
MESJID RAYA	10288	10345	10404	10531	12.277	12.270
PEUKAN BADA	18047	18160	18294	18491	19.457	19.446
PULO ACEH	5743	5777	5812	5980	6.002	5.999
KUTA COT GLIE	10246	10275	10292	10252	10.756	10.750
LEMBAH SEULAWAH	8352	7606	5404	6842	7.184	7.180
INDRAPURI	15490	15644	15624	15660	16.658	16.649
SUKA MAKMUR	11436	11436	11744	12137	12.137	12.130
KUTA MALAKA	4410	4466	4513	4713	4.768	4.765
SIMPANG TIGA	4674	4730	4785	5009	5.009	5.006
DARUL KAMAL	5871	5864	5889	5933	5.932	5.929
KUTA BARO	20864	21017	21185	21155	20.107	20.096
MONTASIK	19155	19232	19308	19377	19.997	19.986
DARUL IMARAH	32380	32265	32675	34421	34.420	34.400
DARUSSALAM	15944	16112	16267	16354	16.355	16.346
BAIUSSALAM	14273	14339	14446	14895	18.177	18.167
LHOKNGA	17015	17092	17150	16301	16.556	16.547
LEUPUNG	6394	6411	6430	6575	7.878	7.874
INGIN JAYA	20514	20672	20755	20853	21.466	21.454
KRUENG BARONA JAYA	8869	8915	8946	8980	10.338	10.332
KOTA JANTHO	7984	5778	5722	5735	5.736	5.733

DISTRICT	YEAR					
	1999	2000	2001	2002	2003	2004
SEULIMEUM	18516	18199	18348	18944	18.944	18.933
<b>ACEH BESAR</b>	<b>287886</b>	<b>285807</b>	<b>285498</b>	<b>290582</b>	<b>301.746</b>	<b>301.575</b>

Source: Aceh Besar dalam Angka, 2003

### C. Sabang City

Population amount in Sabang city in 2003 is 26.505 persons, 12.348 persons/47% lived in Sukajaya district and 26.505/53% lived in Sukakarya District.

Table 3.1.3 Population by District in Sabang City, 1999-2003

District	Population					
	1999	2000	2001	2002	2003	2004
Sukajaya	10.437	10.178	10.637	11.152	12.348	13.367
Sukakarya	12.442	13.476	13.739	14.110	14.157	15.324
Total	22.879	23.654	24.376	25.262	26.505	28.692

Source: Sabang dalam Angka, 2003

## 3.2 GROWTH RATE

Geometric projection formula:

$$P_n = P_o[1+r]^n$$

$P_n$  = projected population in year  $n$

$P_o$  = initial population

$r$  = population growth rate

$n$  = time interval in year

Table 3.2.1 Population Growth Rate of Study Area

DISTRICT	YEAR				GROWTH RATE 1999-2002
	1999	2000	2001	2002	
<b>BAC</b>					
Meuraxa	65.428	66.108	27.468	28.158	2,51%
Banda Raya			17.563	17.802	1,36%
Jaya Baru			20.902	21.137	1,12%
Baiturahman	52.929	52.486	33.399	33.331	-0,20%
Lueng Bata			13.477	15.064	11,78%
Kuta Alam	58.674	62.263	52.824	50.338	-4,71%
Kutaraja			17.467	18.420	5,46%
Syiah Kuala	39.258	39.880	26.401	26.577	0,67%
Ulee Kareng			13.722	15.169	10,55%
<b>BAC SUBTOTAL</b>	<b>216.289</b>	<b>220.737</b>	<b>223.223</b>	<b>225.996</b>	<b>1,47%</b>
<b>SABANG</b>					
SUKAJAYA	10.178	10.637	11.152	12.348	6,65%
SUKAKARYA	13.476	13.739	14.110	14.157	1,66%
<b>SABANG SUBTOTAL</b>	<b>23.654</b>	<b>24.376</b>	<b>25.262</b>	<b>26.505</b>	<b>3,87%</b>
<b>ACEH BESAR</b>					
LHOONG	11.421	11.472	11.505	11.444	0,07%

DISTRICT	YEAR				GROWTH RATE
	1999	2000	2001	2002	1999-2002
MESJID RAYA	10.288	10.345	10.404	10.531	0,78%
PEUKAN BADA	18.047	18.160	18.294	18.491	0,81%
PULO ACEH	5.743	5.777	5.812	5.980	1,36%
KUTA COT GLIE	10.246	10.275	10.292	10.252	0,02%
LEMBAH SEULAWAH	8.352	7.606	5.404	6.842	-6,43%
INDRAPURI	15.490	15.644	15.624	15.660	0,36%
SUKA MAKMUR	11.436	11.436	11.744	12.137	2,00%
KUTA MALAKA	4.410	4.466	4.513	4.713	2,24%
SIMPANG TIGA	4.674	4.730	4.785	5.009	2,33%
DARUL KAMAL	5.871	5.864	5.889	5.933	0,35%
KUTA BARO	20.864	21.017	21.185	21.155	0,46%
MONTASIK	19.155	19.232	19.308	19.377	0,38%
DARUL IMARAH	32.380	32.265	32.675	34.421	2,06%
DARUSSALAM	15.944	16.112	16.267	16.354	0,85%
BAITUSSALAM	14.273	14.339	14.446	14.895	1,43%
LHOKNGA	17.015	17.092	17.150	16.301	-1,42%
LEUPUNG	6.394	6.411	6.430	6.575	0,93%
INGIN JAYA	20.514	20.672	20.755	20.853	0,55%
KRUENG BARONA JAYA	8.869	8.915	8.946	8.980	0,42%
KOTA JANTHO	7.984	5.778	5.722	5.735	-10,44%
SEULIMEUM	18.516	18.199	18.348	18.944	0,76%
<b>ACEH BESAR SUBTOTAL</b>	<b>287.886</b>	<b>285.807</b>	<b>285.498</b>	<b>290.582</b>	<b>0,31%</b>

Source: Additional Study Team, 2006

Population natural growth in study area can be studied based on 1999 – 2002 population data as described in the previous sub-section. Population growth in the study area is as follows: 1) BAC population grows 1.47%, with the highest growth (10-11%) in Ulee Kareng and Lueng Bata. 2) Sabang, population growth 3.87%, with the highest growth in Kecamatan Sukajaya. 3) Aceh Besar, slower growth (0.31%), with the highest growth in Kecamatan Simpang Tiga 2.3% while the slowest growth is in Kecamatan Kota Jantho, which showed a -10% decrease of population.

The details are described in table 3.2.1.



## CHAPTER 4 REGIONAL CENTERS IN THE STUDY AREA AND THEIR CHARACTERISTICS

### 4.1 DEFINITION OF REGIONAL / URBAN CENTER:

Based on its population, the regional/urban center can be classified as:

- **Megapolitan City**, if an urban area has a population of more than 5,000,000; Metropolitan City, if the urban area has a population between 1,000,000 to 5,000,000;
- **Metro City**, where land utilization control is directed towards a harmonious regional/urban center, from the point of view of an administrative as well as functional harmony, and the nature of the plan relates to strategic matters. Metropolitan urban area has a population between 1,000,000 to 5,000,000;
- **Big City**, if the urban area has a population between 500,000 to 1,000,000;
- **Medium City**, if the urban area has a population between 100,000 to 500,000;
- **Small City**, if the urban area has a population between 50,000 to 100,000 (Java Island), or 20,000 to 100,000 (outside Java Island).
- Population in rural area may be less than **small city** population, covering wider area with low population density. Rural classification may be based on its geographic location, such as coastal village, lowland village and mountainous village. Other classification may be based on its potentials, such as self-help village (*desa swadaya*), self-sufficient village (*desa swasembada*) and self-motivated village (*desa swakarsa*). Based on its function a village may be an agropolitan or growth center villages.

### 4.2 IDENTIFICATION OF REGIONAL CENTER IN STUDY AREA

Based on the above definition and classification of regional/urban center, in the study area there is one medium city, which is BAC, four small cities: Kota Baro, Ingin Jaya, Sabang and Darul Imarah. Other centers are classified as rural centers.

Table 4.2.1 Classification of City Size by Population

No	Kecamatan/City	Classification of Urban Center/Urban Regional
1	KUTA MALAKA	Rural center
2	SIMPANG TIGA	Rural center
3	KOTA JANTHO	Rural center
4	DARUL KAMAL	Rural center
5	PULO ACEH	Rural center
6	LEMBAH SEULAWAH	Rural center
7	LEUPUNG	Rural center
8	KRUENG BARONA JAYA	Rural center
9	KUTA COT GLIE	Rural center
10	LHOONG	Rural center
11	SUKA MAKMUR	Rural center
12	MESJID RAYA	Rural center
13	DARUSSALAM	Rural center
14	LHOKNGA	Rural center
15	INDRAPURI	Rural center
16	BAITUSSALAM	Rural center
17	SEULIMEUM	Rural center
18	PEUKAN BADA	Rural center
19	MONTASIK	Rural center
20	<b>KUTA BARO (Peukan Ateuk)</b>	<b>Small City</b>
21	<b>INGIN JAYA (Lambaro)</b>	<b>Small City</b>
22	<b>SABANG (Sabang)</b>	<b>Small City</b>
23	<b>DARUL IMARAH (Lampeuneurut)</b>	<b>Small City</b>
24	<b>BAC</b>	<b>Medium City</b>

Source: Additional Study Team, 2006

### 4.3 EXISTING FUNCTION OF REGIONAL CENTER

Based on its function, each Regional Center can be classified into the following 3 categories: rural center, small city and medium city. In general it can be concluded that 1) Rural Center functions as agriculture area (paddy-field cultivation, plantation and fishery), with a local service scale.; 2) Small City, particularly those in close proximity to BAC are development areas, with emphasis on residential, commercial and service (city service coverage) 3) Medium scale city, which main function is as social and public facility service center (city and regional scale).

Further description can be seen in the following table.

Table 4.3.1 Existing Function of Each Regional Center

Regional Center	Function
montasik, peukan Bada, seulimeum, baitussalam, indrapuri, lhoknga darussalam, mesjid raya suka makmur, lhoong, kuta Cot Glie, krueng Barona Jaya leupung, lembah Seulawah pulo Aceh, darul Kamal, kota Jantho, Simpang Tiga, kuta Malaka	Main function agriculture activity Social/public service center of kecamatan (local) degree Local and neighborhood degree retail

Ingin Jaya / Lambaro ("Lambaro" Satellite City)	Growth of new residential area in Banda Aceh Core City Paddy cultivation Small industry and various industry
Kuta Baro / Peukan Ateuk (Production Center Area "Peukan Ateuk")	Paddy cultivation Growth of new residential area in Banda Aceh Core City Cattle
Sabang City / Sabang ("Sabang" Satellite City)	Tourism Fishery Plantation Small Industry
Darul Imarah / Lampeneurut (Core City Growth Center "Lampeneurut")	Small Industry and Various Industries Growth of new residential area in Banda Aceh Core City Hot spring Tourism
BAC	City and regional scale commercial and service City and regional scale Government Offices City and regional scale Business District City and regional scale public and social facilities City and regional scale education

Source: Additional Study Team, 2006

#### 4.4 URBAN SKELETON

##### 4.4.1 BAC

Urban skeleton consists of road network that becomes the urban and area veins, linking urban primary functions. It usually consists of the widest roads, such as roads classified as Primary Road/Ring Road/Arterial Road.

##### (1) West – East Axis (main Arterial Road)

- ▶ **Access:**  
Jl. Tjut Nyak Dien – Jl. Teuku Umar – Jl. Sultan Alaidin – Jl. M Daud Beurehureuh – Jl. Teuku Nyak Arief – Krueng Raya – Jl. Utama Unsyiah
- ▶ **Road Hierarchy:**  
Function: main road (main arterial road)  
Lane: four lanes  
Length: 18 Km
- ▶ **Road Function**  
Links: Eastern Jaya Baru District – city center – and Syahkuala District.
- ▶ **Problems**  
Traffic bottleneck around the city center, resulting in heavy traffic jams.



##### (2) North – South Axis

- ▶ **Access:**  
Jl. Syah Kuala – Daud Beureuh Kuta Alam Junction – Jl. Baru Poros (Simpang Surabaya)
- ▶ **Road Hierarchy:**  
Function: main road (arterial road)  
Lane: two / four lanes



Length: 29 Km (excluding new road)

▶ **Road Function**

Links: Dayah Raya Sub District– Kuta Alam – Ingin Jaya District, Aceh Besar Regency.

▶ **Problems**

- Bottleneck in Simpang Surabaya, resulting in traffic jams
- Jl. Syiah Kuala is heavily damaged by the 2004 disaster.

(3) Skeleton of City Center – Ulee Lheue

▶ **Access:**

Jl. Lama Pel.Ulee Lheue – Jl. Rama Setia – Jl. Habib Abdurrahman – city center

▶ **Road Hierarchy:**

Function: main road (arterial road)

Lane: two lanes

Length: 4.5 Km (excluding new road)

▶ **Road Function**

Links western sub center (Ulee Lheue) to city center.

▶ **Problems**

Heavily destroyed existing condition by the 2004 disaster.



(4) Skeleton of City Center – Ulee Kareng

▶ **Access:**

Jl. Teuku Iskandar – Jl. Daud Beureuhureuh – city center

▶ **Road Hierarchy:**

Function: Jl. Teuku Iskandar main road (arterial road), Jl. Daud Beureuhureuh (main arterial road),

Lane: Jl. Teuku Iskandar two lanes, Jl. Daud Beureuhureuh four lanes

Length: 5.4 Km (excluding new road),

▶ **Road Function**

Links southeast sub-center to the City Center

▶ **Problems**

Concentration of vehicular and human activities (Traditional Market activities) creates bottleneck in the junction of Pasar Ulee Kareng.



(5) Skeleton of City Center – Lueng Bata

▶ **Access:**

Jl. Sultan Malikul Saleh – Jl. Sultan Alidin Johansyah – city center

▶ **Road Hierarchy:**

Function: main road (arterial road)

Lane: two lanes

Length: 5.1 Km (excluding new road)

▶ **Road Function**

Connects south sub-center (Kota Baru, Sport Center) with city center.



▶ **Problems**

Damaged pavement, traffic jams in active sub-center (shop houses, market)

(6) South Road Skeleton

▶ **Access:**

Jl. Teuku Abd. Rahman Meunasah M – Jl. Soekarno Hatta – To Lampeuneurut

▶ **Road Hierarchy:**

Function: main road (arterial road)

Lane: four Lanes

Length: 5.5 Km (excluding new road)

▶ **Road Function**

Links east sub-center (Jaya Baru) to Lampeuneurut City.

Alternative south ring road (out of the city)



#### 4.4.2 Sabang City

##### A. Urban Skeleton

- Coastal road (Provincial Road), 32,485 km
- Lane: two lanes

#### 4.4.3 Lambaro

##### A. Urban Skeleton

- West – East Axis (main Arterial Road)
  - ▶ **Access:** Peukan Bada / Lhoknga – Lampeuneurut – Lambaro – Blang bintang (Airport)
  - ▶ **Road Hierarchy:** Function: main road (main arterial road)
  - ▶ **Lane:** Peukan Bada / Lhoknga – Lampeuneurut – Lambaro *two lanes*. Lambaro – Blang Bintang (Airport) *four lanes*
  - ▶ **Length:** 15 Km
  - ▶ **Problems** Traffic bottleneck around Lambaro.
- North – South Axis (main Arterial Road)
  - ▶ **Access:** BAC City – Lambaro – Jantho – Medan
  - ▶ **Road Hierarchy:** Function: main road (main arterial road)
  - ▶ **Lane:** BAC City – Lambaro *four lanes*. Lambaro – Jantho – Medan two lanes
  - ▶ **Length:** 23 Km (Jantho)
  - ▶ **Problems** Traffic bottleneck around Lambaro.

## CHAPTER 5 SOCIO-ECONOMIC CONDITION

### 5.1 GROSS REGIONAL DOMESTIC PRODUCT

Based on 2002 data, the study area's GRDP based on present value (excluding oil) in **1) BAC** is 992,662.55 million the biggest contribution came from transportation and communication sector by 33.21%, followed by commercial sector, hotel and restaurant approximately 21.85% **2) Aceh Besar** around 1,509,977.82 million, agricultural sector making the biggest contribution with 52.74% followed by manufacturing sector 18.95%, **3) Sabang** is 142,629.18 million with the biggest contribution (22.22 %) coming from construction sector, followed by commercial sector, hotel and restaurant approximately 22.16%. The following table describes it in more detail.

Table 5.1.1 Gross Regional Domestic Product (GRDP) based on Present Value (Excluding Oil) Year 2002

No	Employment Sector	BAC		Aceh Besar		Sabang	
		In Million	%	In Million	%	In Million	%
1	Agriculture	165,849.41	16.71%	<b>796,350.86</b>	<b>52.74%</b>	28,033.95	19.66%
2	Mining and Excavation	892.21	0.09%	47,402.66	3.14%	2,007.21	1.41%
3	Manufacturing Industry	62,429.73	6.29%	<b>286,136.25</b>	<b>18.95%</b>	9,940.48	6.97%
4	Electricity and Water Supply	9,659.78	0.97%	4,266.85	0.28%	1,622.57	1.14%
5	Construction	70,291.84	7.08%	62,955.39	4.17%	<b>31,697.82</b>	<b>22.22%</b>
6	Commercial, hotel and restaurant	<b>216,896.29</b>	<b>21.85%</b>	84,702.81	5.61%	<b>31,607.07</b>	<b>22.16%</b>
7	Transportation and communication	<b>329,708.21</b>	<b>33.21%</b>	140,596.51	9.31%	9,283.30	6.51%
8	Finance, rental and corporate service	60,492.75	6.09%	16,583.83	1.10%	5,284.58	3.71%
9	Services	76,442.33	7.70%	70,982.66	4.70%	23,152.20	16.23%
<b>Total</b>		<b>992,662.55</b>	<b>100.00%</b>	<b>1,509,977.82</b>	<b>100.00%</b>	<b>142,629.18</b>	<b>100.00%</b>

Source: Statistik Tahun 2002

It can be concluded that the main function of BAC is its service function, because of BAC's position as the capital of the province. Sabang is a service city in a smaller scale, supported by tourism activities in particular. Aceh Besar tends to exhibit rural characteristics because the major contributor to its GRDP is the agricultural sector.

### 5.2 EMPLOYMENT

Total number of labor in study area is 213,358, with 86,110 in BAC, 12,579 in Sabang and 114,669 in Aceh Besar. The number of unemployed in the study area is quite high, reaching up to 15% from total labor force or 31,373 (note BAC: before tsunami).

Table 5.2.1 Number of Labor and Job Seekers in 2003

No	Regency	Labor Force	Job Seekers	%
1	Banda Aceh	86,110	11,772	14%
2	Sabang	12,579	1,517	12%
3	Aceh Besar	114,669	18,084	16%
<b>Total Study Area</b>		<b>213,358</b>	<b>31,373</b>	<b>15%</b>

Source: BPS Statistik NAD

It can be concluded that there are significant number of unemployed labors. This may trigger social problems in BAC and surrounding areas. Thus it is imperative to have a spatial plan that can allocate space for economic activities in order to create job opportunities, for instance in agricultural, industrial, commercial and service sectors, etc.

### **5.3 CULTURAL ACTIVITIES**

Aceh people Moslem character shown in their daily behavior, moreover, after the implementation of Moslem law effectively in all NAD area. It is expected that there will be urban public space usage rules and in the activity pattern in the future.

#### **(1) Society Cultural Routine Activity**

Routine religious ceremonial activity has mingle with other people daily activity, that it is affected the cultural-social activity space arrangement. It is shown in the act of preparing religious ceremonial place in micro scale (a room in the office, house, store, etc), and in macro scale (district or city mosque).

Commonly, the mosque location become the center space that connected with the main circulation line.

Aceh culture is also related with community respect on their late religious leaders, this is shown in their activities of visiting the late religious leader memorial burial (burial of Syiah Kuala at Deah Raya), that the burial area is part of the ritual activities.

After the tsunami, the tradition to visit memorial burial expanded to visit the mass grave of tsunami victims. The people think that anybody who died in the disaster are syuhada because they died in Syahid. The mass grave had became public space that supposed to developed into spiritual tourism site for Aceh people.

#### **(2) Aceh People Culture Characteristic**

The general Ace people culture that related with life are as agricultural society (farming and semi-fishery). The society living system recognize seasons and many spare times, this construct the society who loves to 'chitchat' in public spaces / coffee stall (in rural Aceh in their leisure time). The tradition of 'practical politics' in coffee stalls has already becoming parts of the urban society nowadays.

The live hood in the urban area has the character of commercial society (commercial city). The Banda Aceh city had had it golden age as a harbor city and this affected the people characteristic. This is shown in city development type that famous with "one million shop". In Aceh people opinion, a shop is only for commercial purposes, but the shop building has flexibly change from time to time along the activity function that always enhance and change.

The Banda Aceh City people has the entrepreneurship character. Many villages famous with cultural product stuffs, such as traditional Aceh cookie producer in Meuraxa (the cookie is part of Acehness wedding tradition); weaving village produce Aceh's wedding sets (Kp. Siem, Aceh Besar); house ware producer village that produce cooking sets (Ateuk Munjeung).

These home industries has developed along the community needs especially the needs of cultural sets/equipments that cannot be made by other society. These industries development related with the government policy observance over culture as human existence. When there is no appropriate policy supporting the society, there wont be any industrial mass production will overcome the existing cultural product.

### **5.4 INDUSTRIAL ACTIVITIES**

Industrial activities in Banda Aceh City generally limited on small scale industry (home industry/miscellaneous) and mid scale industry with the investment less than 1 billion rupiahs.

This small scale industry has become the people main source of revenue in Banda Aceh City (especially to those who did not work as office worker), in some places/villages there are arise of small/mid scale industry activity suits to their resources (especially traditional villages), such as cultural product handicraft industry (marine product processing, traditional culinary, Aceh motif cloth border, etc).

#### **(1) Small and mid scale Industry Type**

Small and mid scale industry activity can be divided based on processed material character. Small

scale industry: food/culinary, and accessories, house ware (earthenware, zinc, iron), wood/rattan handicraft, and metal and gold handiwork. For mid scale industry: wood craftsmanship, marine product processing industry (in coastal villages area).

## (2) Small and mid scale industry location

The location spread out in the middle of urban people settlement and un-specifically arranged, that it is difficult for the operational monitoring as well as to monitor the waste excess.

At present, the monitoring results from Banda Aceh City Industrial and Commercial Agency (Dinas Perindustrian dan Perdagangan), the small scale industry activities in Banda Aceh City has not yet generate any environmentally pollute waste.

Several small scale industries which are main source of revenue for the villagers has made the village famous of those industrial products.

Several villages main product that brought the villages into famous shown in the table bellow:

Table 2.5.4.1 Small and mid scale Industry

No.	Type of Industry	Location	Condition	
			Pre-tsunami	Post-tsunami
1	Culinary Industry			
a	Aceh Traditional Cookie	Lambung, Lam Seupeung, Lam Keuweh, Ulee Kareng, Desa Doi, Kp. Jawa	Well developed	Mostly destroyed by the disaster, there are some leftover at Ulee Kareng, Lam Seupeung, and Desa Doy
b	Tofu/tempeh production	Blower	Well developed	Remains/well developed
c	Fish processing	Ulee Lheue, Kp. Jawa, Lam Pulo	Well developed, broadly put on the market not only in Aceh area	Totally destroyed
d	Cow jerked meat	Lam Seupeung, Peunayong	developed	Partly destroyed
2	Clothing/ textile industry			
a	Aceh's motif Bordir	Lambaro Skep, Lam Dingin	developed	Totally destroyed
b	Golden yarn embroidery	Ulee Lheue, Ulee Kareng, Blower	Less developed	Partly destroyed
c	Aceh motif Krawang bag	Ateuk Munjung	Less developed	Developed
3	House ware			
a	Earthenware	Ateuk Munjung	Less developed	Less developed
b	Knife/chopping knife production	Ulee kareng	Less developed	
4	Furniture			
a	Rattan	Beurawe	Less developed	Developed
b	Wood	Lambhuk, Ulee Kareng, Lam teumen, Darussalam	Developed	Highly developed
5	Gold and metal	Lam Seupeung	developed	Highly developed

Sumber: hasil wawancara dengan pegawai Dinas perindustrian, 2006

Before the tsunami, the industrial activity development was related with general society economic activity which basically fulfilling only the local people demand. Nowadays, it is found that several industrial activity has less competitive / losing competition with another cheaper new product in the market. Several specific product, local traditional handicraft, still producing/exists, although with weak prospect, such as Aceh traditional wedding sets.

After the tsunami, some of the product has become handicraft product souvenir for guests



or visitors in the occasion of Aceh reconstruction. The condition estimated only during the Aceh rehabilitation and reconstruction period.

### **(3) Industrial Activity Development Concept**

At present, small scale industrial activity development in Banda Aceh city related with the society economic condition rehabilitation, new industrial central is necessary to generate local villages effective industrial operation and the waste dumping system.

Working coordination carried out by the government, and the working facilities provided by another party or from the community self support, and marketing will be done in "bapak angkat" system (join operation system), with another implementer business such as restaurant or guest house /hotel, travel bureau and terminal, and another business effort to market Aceh local product broadly spread out not only in Aceh area.

## **5.5 TOURISM ACTIVITIES**

Pre-tsunami Banda Aceh City tourism limited on local community activity to fulfill their recreational and spiritual needs. But Weh existence (Sabang City) as a national scale tourism object (aquatic park and the "Indonesian zero kilometer") has made Banda Aceh City to become the gateway to Sabang. And the Lhoknga beach (Aceh Besar Regency) has influence on tourism activity in Banda Aceh City.

### **(1) City Tourism Location**

Banda Aceh City people needs of recreation shown in their regular visit to he city's parks:

- Taman Sari, children playground and family recreation space.
- Historic Objects, especially the syuhada's memorial burial (Syiah Kuala grave, Moslem leader grave at Tibang, etc).
- Baiturahman Great Mosque Park, popular public space to visit, and also waiting space for the Maghrib prayer moment, with the Modal Tower to observe the Banda Aceh City view/scene from heights.
- Specific places related with culinary activity such as Ulee Kareng (famous Ulee Kareng coffee), Reg Peunayong Park (people relaxing spot at night).

Tourism activity shown also in annual / periodical event that reflects Aceh Cultural Historical Sequence (Pekan Kebudayaan Aceh) organized in Ratu Safiatuddin Square Complex (Lampriet). Ratu Safiatuddin Square Complex is a very strategic for the mass media to introduce the whole Aceh culture.

### **(2) Tourism Location/Site Condition**

Post-tsunami, Banda Aceh City people recreational space has been change a lot, many recreational space has been destroyed/disappear (coastal line), but on the other side, there new locations emerge (lampuúk fish barbeque spot along the Lamnyong flood canal river bank, and public space for playground around fishponds at Ratu Safiatudin Square).

Observed from the existing and value of historical sites elements in Banda Aceh City, the fact is, Banda Aceh City has a lots of location appropriate for tourism objects, especially the historic tourism. Before the tsunami, there are quite thick line of the City historical sequence since the XII century (from Lamuri Kingdom's site at Gampung Pande and Gampong Jawa), and the history of initial entrance of Moslem in Indonesia. Most of the sites located at the coastal line or along the Banda Aceh City main riverbank with the terrible care and extinction in danger. After the tsunami, many sites has lost or destroyed deliberately or not, destructed by the tsunami or deliberately ruin by the reconstruction process that did not concern about those historical sites. The lost of the sites means the lost of Banda Aceh City existence .

## CHAPTER 6    INFRASTRUCTURE

### 6.1 ROAD

#### A. Aceh Besar Regency

87, 72 percent from total road length that exist in Aceh Besar Regency are asphalt road. Based on road conditions 51, 31 percent road are in good conditions. Meanwhile based on class of road, 73, 35 percent from total road length are road in III C class. For specific data are shown on table below:

Table 6.1.1 Road Length Based On Class and Conditions In Aceh Besar Regency, 2003

Detail	Road Length (Km)			Total	Percentage
	State Street	Province Street	Regency Street		
Surface Type:					
1. Asphalt	154.00	105.00	848.97	1,107.97	87.72%
2. limestone			64.53	64.53	5.11%
3. Land			90.55	90.55	7.17%
4. Not detailed					
Road Conditions:					
1. Good	154.00	105.00	424.975	683.98	51.31%
2. Average			486.208	486.21	36.47%
3. Damage			162.919	162.92	12.22%
4. Totally Damage					
Class of Road:					
1. Class I					
2. Class II					
3. Class III A	154.00			154.00	15.84%
4. Class III B		105.00		105.00	10.80%
5. Class III C			713.00	713.00	73.35%
6. Not detailed					
Class					

Source: Aceh Besar dalam Angka, 2003

#### B. Sabang City

90, 70% road network in Sabang City are asphalt road. Based on road conditions, 37, 34% roads in Sabang City are damaged. Meanwhile based on class of road, 60, 43% from total existing road length are the class II. For specific data are shown on table below:

Table 6.1.2 Road Length Based On Class and Conditions In Sabang City, 2003

Detail	Road Length (Km)		Total	Percentage
	District road	Provincial roads		
Surface Type:				
1. Asphalt	134,920	32,485	167,405	99.70%
2. Limestone	0	0	0	
3. Land	500	0	500	0.30%

## **6.2 FERRY**

Although playing minor role in urban transportation, sea transportation is vital for regional transportation, especially cargo traffic. Malahayati sea harbor in Krueng Raya is supported by arterial road network, connecting BAC, Krueng Raya, Medan and other cities. There is also an industrial zone in this area.

As part of transportation network, airport should have high accessibility from and to road network, in order to easily facilitate inter-modal transfer.

Ferry transport connects BAC to Sabang in Weh Island, especially for passenger. As free port zone, Sabang is considered as a traffic generating zone. Ferry service terminal in Ulee Lheue has been destroyed in the disaster and will be reconstructed.

Table 6.1.3 List of Goods and passengers in All marine ports in Aceh Besar

No	Ports	Ships		Goods				Passengers			
		Number of trips		Board		Alight		Domestic		International	
		National	Foreign	Import	International	Export	International	Board	Alight	Board	Alight
1	Malahayati	2.738	301	55.965	441.434	170.526	807.998	156.400	159.965		
2	Sabang	979	137	58.667	65.326	2.405	41.532	139.636	130.758		
	JUMLAH	4.976	745	5.916.457	2.770.276	21.414.431	3.854.093	336.395	329.251	1.739	

Source: Tatra wil, 2004

Table 6.1.4 List of facilities in all ports in Aceh Besar

No.	Ports	Wharf Capacity	Sea side			Land side		
			Facilities	Unit/Volume	Conditions	Facilities	Volume	Condition
1	Ulee Lheue	2000 grt	- concrete pier	1	Good	- terminal & office	1 unit	Under construction
	BAC		- causeway			- parking lot	8.274 m <sup>2</sup>	Under construction
			- trestle	202.80 m <sup>2</sup>	Good	- access road		
			- catwalk	15 m <sup>2</sup>	Good	- r. Jembatan timbang		
			- breastthink dolphin	3	Good	- jembatan timbang		
			- fender		Good	- toll gate (25 m <sup>2</sup> )	1 unit	Good
			- mooring dolphin		Good	- shelter		
			- movable cylinder			- genset housing		
			A. Hydraulic cylinder			- genset		
			B. Bridge			- radio communication		
			C. Control panel			- sound system		
			D. Control room			- fence	1 pkt	Good
			E. Abutment			- entrance	1 pkt	Good
			- mb protector			- fire alarm		
			- gangway/boarding	1 pkt	Good	- lighting protection		
			- bridge			- telephone		
			- break water	1 pkt	Good	- fire hydrant		
			- light be acon			- water facility	1 unit	Good
			- retaining wall	268 m <sup>2</sup>	Good	- fuel facility	1 unit	Good
			- lighthouse	1 unit	Good	- lighting	1 pkt	Good

No.	Ports	Wharf Capacity	Sea side			Land side		
			Facilities	Unit/Volume	Conditions	Facilities	Volume	Condition
						- security post		
						- park	1 pkt	Under construction
2	Balohan	1500 grt	- pier	485 m <sup>2</sup>	Good	- terminal & park	370 m <sup>2</sup>	Good
	Sabang City	4 m	- causeway			- parking lot	3731 m <sup>2</sup>	Good
			- trestle	202.80 m <sup>2</sup>	Good	- access road	155 m <sup>2</sup>	Good
			- catwalk	66.12 m <sup>2</sup>	Good	- r. Jembatan timbang		
			- breastthink dolphin	3	Good	- jembatan timbang		
			- fender	6 unit	Good	- toll gate	7 m <sup>2</sup>	Good
			- mooring dolphin	2	Good	- shelter	3 units	Under construction
			- movable cylinder			- genset housing		
			A. Hydraulic cylinder			- genset		
			B. Bridge			- radio communication	2 units	Good
			C. Control panel			- sound system	2 units	Good
			D. Control room			- fence	202.5 m	Good
			E. Abutment			- entrance	14 m	Good
			- mb protector			- fire alarm		
			- gangway/boarding	145.80 m <sup>2</sup>	Good	- lighting protection		
			- bridge	155 m <sup>2</sup>	Good	- telephone	2 units	Good
			- break water			- fire hydrant	3 units	Good
			- light be acon			- water facility	1 unit	Good
			- retaining wall	3588.90 m <sup>2</sup>	Good	- fuel facility		
			- lighthouse	1 unit	Good	- lighting	32 points	Good
						- security post	8 m <sup>2</sup>	Good
						- park	1 pkt	Good
3	Lamteng	600 grt	- pier	1	Under construction	- terminal & office		
	Pulo Aceh		- causeway	133.65 m <sup>2</sup>	Good	- parking lot	5.250 m <sup>2</sup>	Good
			- trestle			- access road		
			- catwalk			- r. Jembatan timbang		
			- breastthink dolphin			- jembatan timbang		
			- fender			- toll gate		

No.	Ports	Wharf Capacity	Sea side			Land side		
			Facilities	Unit/Volume	Conditions	Facilities	Volume	Condition
			- mooring dolphin			- shelter		
			- movable cylinder			- genset housing		
			A. Hydraulic cylinder			- genset		
			B. Bridge			- radio communication		
			C. Control panel			- sound system		
			D. Control room			- fence		
			E. Abutment			- entrance		
			- mb protector			- fire alarm		
			- gangway/boarding	348.56 m <sup>2</sup>	Under construction	- lightning protection		
			- bridge			- telephone		
			- break water			- fire hydrant		
			- light beacon			- water facility		
			- retaining wall	512 m <sup>2</sup>	Good	- fuel facility		
			- lighthouse	1 unit	Under construction	- sign		
						- security post		
						- park		

Source: Tatravil study, 2004

### 6.3 AIRPORT

Iskandar Muda Airport in Blang Bintang has 3 access roads as follows: (a) access via Lambaro through arterial road, (b) access via Darussalam through local road and (c) access via Ulee Kareng through local road.

In 2003, the total flight comes to the airport reached 1,503 trips, with total passengers boarding at 100.306 people. There is no data for 2004 and 2005, but the total passengers are predicted to increase.

Table 6.1.. List of Facilities in All Airports in Aceh Besar District

No.	Facilities	Sultan Iskandar Muda Banda Aceh	Maimun Saleh Sabang
1	Runway number	17 - 35	09 - 27
2	Runway length	2500 x 45	1850 x 30
3	Slope	0.9%	
4	Construction	Hotmix	Hotmix
5	Taxiway	175 x 23	150 x 23
6	Apron	Flexible 260 x 90	140 x 60
		Rigid 96 x 90	
7	Turning area	Available	Available
8	Paved shoulder (right)	80 x 2690	60 x 1910
9	Paved shoulder (left)	80 x 2690	60 x 1910
10	Overrun	2 x 60 x 45	2 x 30 x 30
11	Open drainage	Available	Available
12	Closed drainage	Available	Available
13	Border fences	Available	Available
14	Capacity	B - 747	F - 28
15	Apron perimeter fence		
16	Marking	Available	Available
17	Coordinate	05 31' n	05 52' n
		095 20' e	095 20' e
18	Elevation	65 feet	110 m

Source: Tatrawil Study, 2004

### 6.4 WATER SUPPLY

#### A. BAC

Water supply of BAC is served by PDAM (Water Supply Authority) Tirta Daroy Banda Aceh. PDAM Banda Aceh has two water treatment plants (WTP), Lambaro dan Siron with each capacity reaching 37.584 and 1.728 m<sup>3</sup>/day. Total number of house connections is 14.656.

Planning and design criteria by URRP are realistic, including forecast of water demand. Preliminary design that planned with urgent rehabilitation of Lambaro WTP was done. Water supply distribution network rehabilitation is important to provision of potable water for the community with a quality, quantity, and continuity that conforms to prevailing requirements. Mission, strategy, and goals must be planned to make a good perform of water supply system.

The principal goal of water supply system is as follows:

- Provision of potable water for the community with a quality, quantity, and continuity that conforms to prevailing requirements.

- The fulfillment of a steady water supply system, with operation and maintenance conforming to proper procedure.
- Urban water supply system that can fulfill water demand according to the growth of the city.
- Reducing Unaccounted for water.
- Institutional and financial empowerment of PDAM
- The delivery of first quality service

The analysis is conducted to project water demand until the year 2015, based on the following design criteria:

Table 1.27. Design Criteria for Water Supply System

Description		Unit	2005	2006	2007	2008	2009	PU Guideline	
Connection	Served population	%	58	60	65	70	80		
	Average family size		1,5						1:(5-6)
	House connection	%	90						80-90
	Public tap	%	10						10..20
Unit Consumption	House connection	lpcd	150						150
	Public tap	lpcd	40						30-50
	Non-domestic	%	20						15-30
UFW		%	50	45	40	35	30	30-50	
Maximum Daily Demand Factor			1.1						1.1-1.5
Peak Hourly Demand Factor			1.5						1.5-2.0

Based on the design criteria, water demand can be predicted.

Table 1.28. Forecast of Water Demand

Description		unit	2005	2006	2007	2008	2009	2015
Population		person	200,843	212,893	225,767	239,206	254,000	360,304
Served Population	Total	person	116,489	127,736	146,749	167,444	203,200	288,243
	House Connection	person	104,840	114,962	132,074	150,700	182,880	259,419
	Public Tap	person	11,649	12,774	14,675	16,744	20,320	28,824
Net Demand	House Connection	m <sup>3</sup> /day	15,726	17,244	19,811	22,605	27,432	38,913
	Public Tap	m <sup>3</sup> /day	466	511	587	670	813	1,153
	Non-Domestic	m <sup>3</sup> /day	3,238	3,551	4,080	4,655	5,649	8,013
	Total	m <sup>3</sup> /day	19,430	21,306	24,478	27,930	33,894	48,079
UFW	Rate	%	50	45	40	35	30	30
	Amount	m <sup>3</sup> /day	9,175	9,588	9,791	9,775	10,168	14,424
Gross Demand		m <sup>3</sup> /day	29,146	30,894	34,269	37,705	44,062	62,503
Supply Capacity	Lambaro	m <sup>3</sup> /day	37,584	37,584	37,584	37,584	37,584	37,584
	Siron	m <sup>3</sup> /day	1,728	1,728	1,728	1,728	1,728	1,728
	Total	m <sup>3</sup> /day	39,312	39,312	39,312	39,312	39,312	39,312
Balance		m <sup>3</sup> /day	10,166	8,418	5,043	1,607	-4,750	-23,191

Source: Consultant Analysis, 2005

Water demand for 2006 is 30,894 m<sup>3</sup>/day, water supplied by Lambaro WTP is 37,584 m<sup>3</sup>/day and Siron WTP 1,728 m<sup>3</sup>/day. Total available water is 39,312 m<sup>3</sup>/day.

Starting from 2009, with a water demand level at 44,062 m<sup>3</sup>/day, there will be a water



deficit of 4,750 m<sup>3</sup>/day. This deficit will increase on 2015 to 23,191 m<sup>3</sup>/day.

An implemented realistic program will involve:

- Water resources and water treatment
  - Rehabilitation and reconstruction (include up-rating)
  - Exploration of new sources.
- Rehabilitation and development of distribution system
- Management and human resources aspects

**B. Surrounding Area**

Concept for water supply in surrounding area is

- Expand distribution system to serve Temporary Living Centre (TLC) and new housing with piped water
- Rehabilitate water supply system
- Expand distributions pipelines from existing water system to serve new areas

Total served on 2005 is 66.000 population, with forecast 101.000 on 2008 and 143.000 population on 2010. Water supply system in surrounding area as see in figure

.....

**6.5 DRAINAGE**

**(1) Situation before Disaster**

The urban drainage system in the city accommodates not only storm water but also effluent from the septic tanks and domestic water from houses and food services, industrial wastewater from factories, since there installed no separate sewerage system. Along the trunk roads, network of drainage conduits was extended almost over the entire city area.

The urban drainage in the city is under control of DPU. According to DPU, the existing drainage area covered the area of 35 km<sup>2</sup>, and is divided into 3 zones and further sub-divided into 17 sub-areas. Mainly owing to topographic conditions combined with water tide effect, it is not possible to drain the entire areas in gravity flow and therefore there were pumping stations at outlet of trunk drainage channels and temporary retardation areas of the storm water as shown in Figure 6.1. The trunk drainage channels are connected to the Ache River and its tributaries and floodway. The principal features of drainage system before disaster was as follows.

Table 6.5.1 Principal Features of Drainage System before Disaster

Description	Unit	Drainage Zone I	Drainage Zone II	Drainage Zone III	Total
Drainage area	ha	957	992	1,550	3,499
Nos. of sub-drain area	nos.	6	5	6	17
Nos. of pumping stations	Nos.	4	1	3	8
Length of primary drains	m	22,735	12,937	15,690	51,362
Water gates	Nos.	25	30	43	98

Source: Master Plan for Urban Development 2004, DPU

It is supposed that drainage conduits might have reduced its conveyance capacity owing to deposit of sediment, debris, garbage, etc. at many locations. Combined with topographic characteristics, some areas of the city are thus prone to inundation when there was heavy down pour, according to DPU.

**(2) Situation after Disaster**

More than 90% of drainage channels were filled with mud and debris. 7 pumping stations out of 8 have been washed away according to DPU. Table 6.2 presents degree of damages on the drainage system.



Table 6.5.2 Damages on Drainage Structures




Structures	Description	Unit	Zone I	Zone II	Zone III	Total
Pumping stations	Existing	Nos.	4	1	3	8
	Damaged	Nos.	4	0	3	7
	Damage ratio	%	100	0	100	88
Primary drains	Existing	m	22,735	12,937	15,690	51,362
	Damaged	m	6,177	3,490	1,927	11,594
	Damage ratio	%	27	27	12	23
Water gates	Existing	Nos.	25	30	43	98
	Damaged	Nos.	15	7	8	30
	Damage ratio	Nos.	60	23	19	31

Source: DPU

The most of drainage facilities in the area along the coast was seriously damaged and/or collapsed mainly due to tsunami. In addition dykes and flood walls along the major rivers/floodways were also washed away and/or collapsed in many locations, resulting in inundating vast lands along the rivers/floodways. It is challenge for DPU how to tackles the problem of marching rainy season in 2005, high tide and their combination. Urgent measures are indispensable not only normalization of drainage channels in residential areas but also urgent repairs of collapsed dykes/flood walls, otherwise inundation would happen over the substantial portion of the city area.

Figure 6.5.1 Presents typical damages on various drainage structures.

	<p>(1) Location: Primary Channel in Meuraxa Region Caption: Inundation is observed due to damaged drainage channel.</p>
	<p>(2) Pumping Station and gate at Titi Panjang River were washed away and seriously damaged respectively.</p>

	<p>(3) Break of the Doy river dyke and subsequent inundation.</p>
	<p>(4) Recovery Work for Digging Channels, Kuta Raja Region.</p>
	<p>(5) Sedimentation in drainage conduit by debris and garbage.</p>

**6.5.1 Urgent Rehabilitation and Reconstruction Plan for Urban Drainage from JICA Study Team**

**a. Mission, Strategies and Goals**

As noted in existing drainage, substantial portion of existing drainage facilities were damaged completely. In addition, dykes and floodwalls along main rivers/floodway were broken out and/or washed away at many locations and in length. It is very serious matter how quickly such damaged/washed out/destroyed facilities could be restored in order to save people and properties against coming rainy season and high tide. In addition urban drainage system will be required to be re-organized in conformity with a new road network and urban development plan.

Table 6.3. Mission, Strategy and Goals for Urgent Rehabilitation and Reconstruction Plan for Urban Drainage

<p>Mission</p>	<p>To ensure safety of human lives and properties                  To contribute to enhancement of economic development activities without any interruption even during high tide and rainy season                  To complete systematic urban drainage network over the entire city area</p>
<p>Strategies</p>	<p>To minimize habitual inundation areas with reinforcement of drainage facilities                  To layout drainage network in conjunction with urban road development plan                  To remove sediment, debris and garbage deposits in conduits                  To reinforce O &amp; M capability of DPU</p>
<p>Goals</p>	<p>To reinstall systematic drainage in devastated area by 2009                  To reinstall and reinforce drainage pump stations by 2009                  To rehabilitate broken and destroyed dyke and floodwall urgently</p>

Source : JICA Study Team, 2005

## **b. Planning Criteria**

For the sector under consideration, existing design criteria are widely deployed. It is however deemed necessary to conduct in-depth study before realization of actual rehabilitation and reconstruction works.

### (1) General criteria

Target year	:	Rehabilitation; 2006, Reconstruction; 2009
Target area	:	Banda Aceh City with administrative area of 61 km <sup>2</sup>
Population in 2009	:	254,000 as projected under this study
Population distribution	:	As per studied as a part of urban development plan of this study
Urban development	:	As per spatial and urban development plans of this study

### (2) Criteria for drainage system design

Design storm rainfall	:	165 mm with a return period of 5 years
Run off calculation	:	Rational formula
Run off coefficient	:	Variable, characterized by drainage area
Drainage conduit	:	Rectangular shape

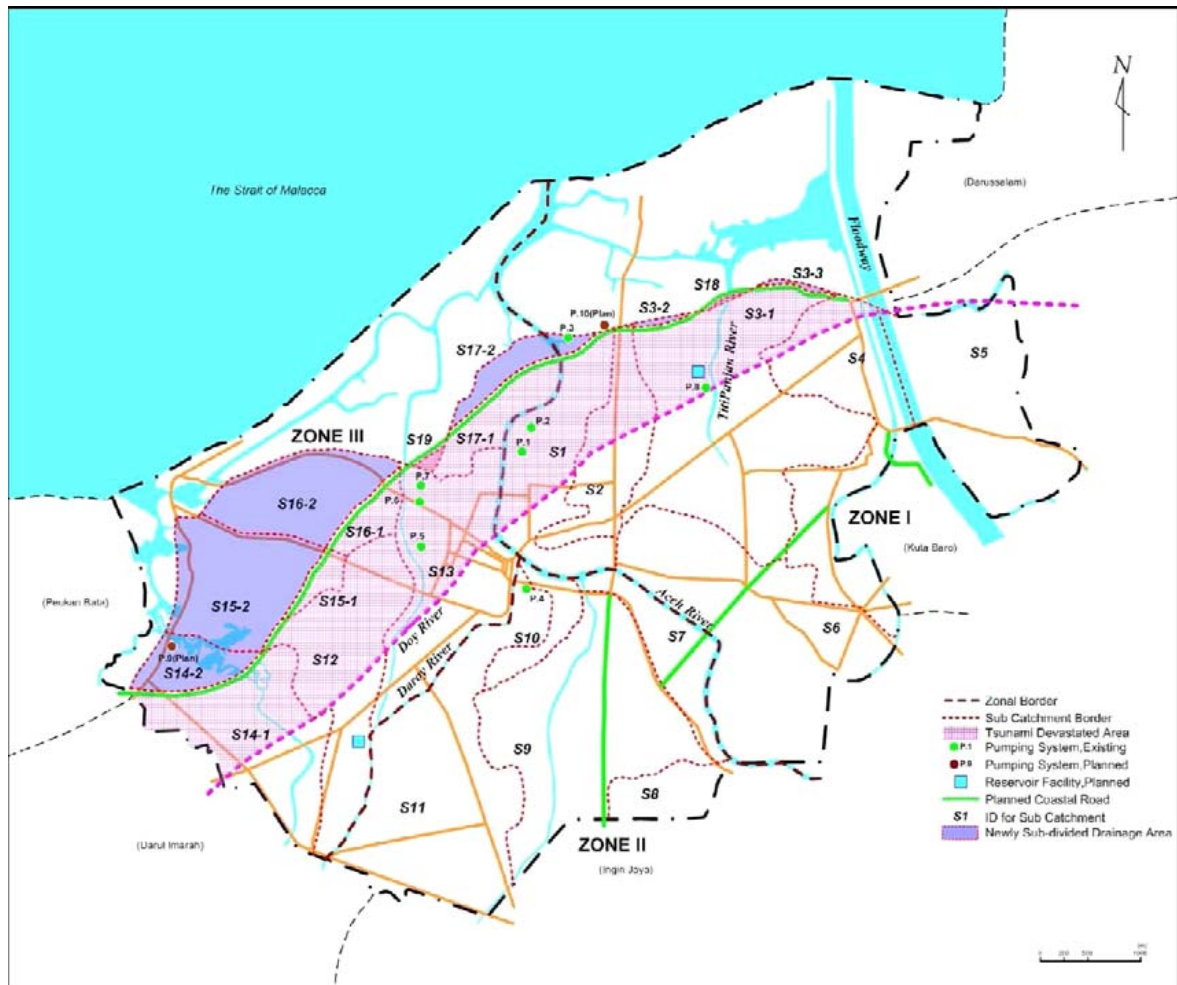
## **6.5.2 Preliminary design of urban drainage system**

### **a. Delineation of Drainage Zones**

The urban drainage development plan is basically followed to the master plan established by DPU, which was prepared before disaster but it is judged that this master plan still adaptable with slight modification to newly proposed urban plan under the current study.

In principle, the whole city area is divided into three (3) zones, the same as existing, but characterized by the new urban development plan. Four (4) sub drainage areas are proposed to be newly created. The proposed new drainage areas are as shown in Figure 6.2.

Figure 6.2. Drainage Areas



Source : JICA Study Team

**b. Storm Run off**

Given the catchments area of each sub-drainage area and planning criteria, storm runoff is calculated for the respective primary drains as shown in Table 6.4. In calculation, runoff coefficient is derived from that used by DPU in their master plan.

**c. Assessment of Discharge Capacity of Existing Drains and Pumping Stations**

The discharge capacity of existing primary drains and pumping stations was calculated under conditions before disaster and based on features of drains and pumping facilities which were made available from DPU. The resultants were compared to the storm run-off calculated so that improvement needs are clarified quantitatively. This comparison is presented in Table 6.4.

Table 6.4. Capacities of Existing Drainage Facilities vs. Run-off

Sub-drainage areas	Name	Drain to:	Runoff (m <sup>3</sup> /s)	Discharge Capacity of Drain (m <sup>3</sup> /s)	Pumping Capacity (m <sup>3</sup> /s)
1.3	P.1	Aceh R.	1.205	1.082	0.245
1.2	P.2	Aceh R.	0.268	0.470	0.200
1.1	P.3	Aceh R.	1.254	0.357	0.270
11.1	P.4	Daroy R.	1.480	1.099	0.745
13.5	P.5	Doy R.	0.539	0.51	0.824
13.1	P.6	Doy R.	2.628	0.512	0.225
13.6	P.7	Doy R.	2.552	4.022	0.200
3	P.8	TitiPanjang	11.080	0.686	0.225
1	P.9	Aceh R.	-	-	-
14	P.10	Neng R.	-	-	-

Source: JICA Study Team

It is revealed that of the existing 8 pumping stations, 7 stations have less capacity than the required drainage quantity. Also it is assessed that existing drains are not capable of conveying storm runoff. Thus excess water stagnates at many locations resulting in disturbing traffic flow, inundation of properties and hampering daily life of people.

#### d. Preliminary Design of Drainage System

In view of geographical situation and as already planned by DPU before disaster, it is considered rational to plan drainage system with a combination of drainage conduits, pumping station and retardation ponds. Proposed layout of drainage plan is as shown in Fig 6.3 and proposed rehabilitation and reconstruction plan is presented in Table 6.5.

##### (1) Primary drains

The total length of primary drains extends over a distance of 51,362 m of which 11,595 m were damaged and/or destroyed. They will all be rehabilitated and/or reconstructed. In addition new primary drains will be installed in Zones I and III: 2,360 m in Zone I and 5,748 m in Zone III. New drains will be in trapezoidal section and lined with masonry as is most typically seen in the city.

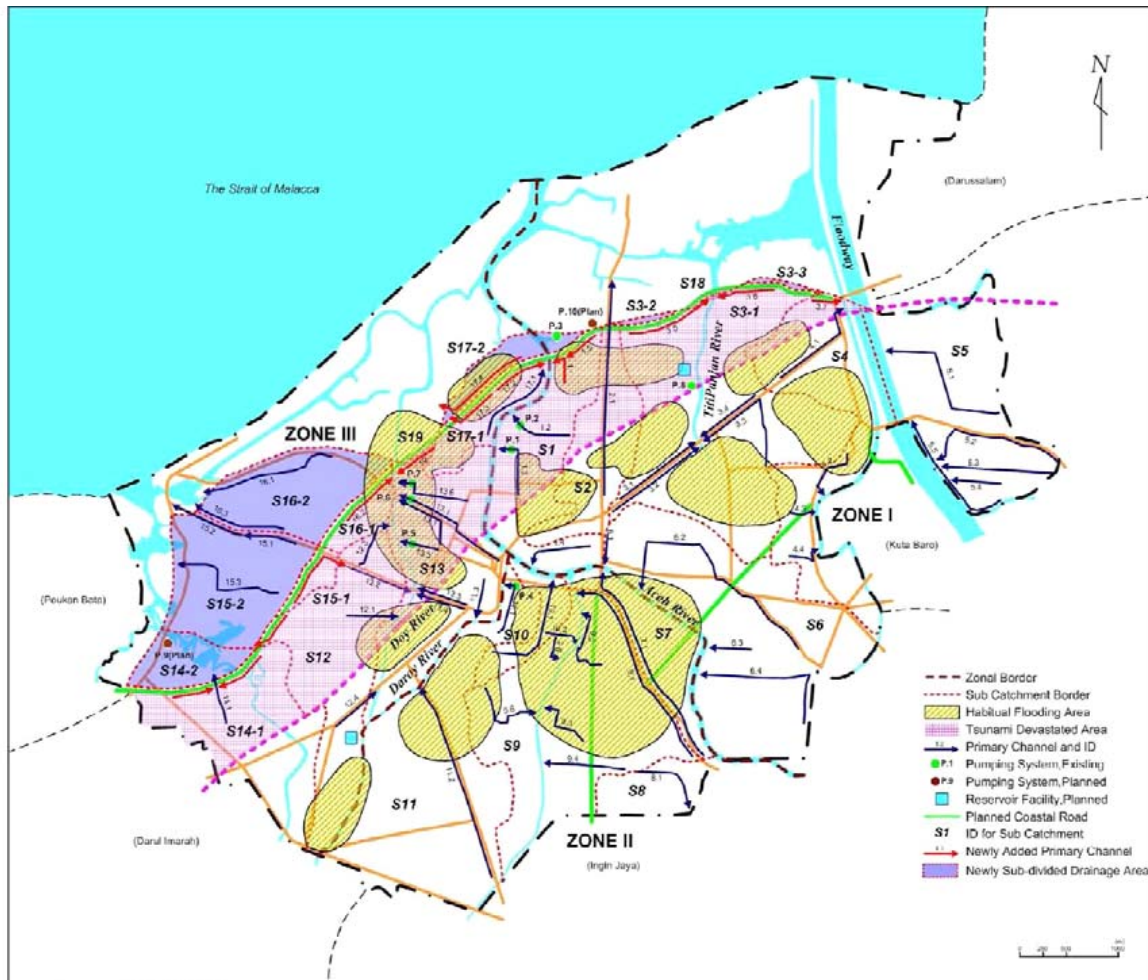
##### (2) Pumping stations

8 pumping station will be reconstructed, of which 7 pumping station will have more discharge capacity than the original.

##### (3) Retarding ponds

Two retarding ponds will be required to be newly created to absorb excess run-off. One will be located in Zone I with a storage capacity of 54,000 m<sup>3</sup> and the other in Zone III with a storage capacity of 75,000 m<sup>3</sup>.

Figure 6.3. Outline of Rehabilitation and reconstruction Plan for Urban Drainage



Source : JICA Study Team

### (1) Preliminary Project Cost Estimate

The rehabilitation and reconstruction cost was estimated on a basis of data and information made available from DPU. Preliminary project cost for the urgent rehabilitation and reconstruction works proposed in this study is estimated based on the following conditions and assumptions, however, these are subject to change due to finalization on the Indonesian authorities.

#### Conditions and Assumptions for Preliminary Cost Estimate

- (1) Physical contingency and price escalation are assumed to be 10% each of the direct construction cost.
- (2) Engineering services is assumed to be 10% of the direct construction cost for detailed study & design and construction supervision.
- (3) If project is purely program type and/or procurement, only price contingency is considered.
- (4) VAT is included in the cost, however, import duties are not included in the cost.

- (5) Land acquisition and compensation costs are not included in the Project cost due to difficulty of estimation at this time.

Also the project cost is estimated for each of implementation packages which are determined in accordance with in order of priority for implementation as described in the succeeding section 5.4. The estimated project cost is shown in Table 6.5.

Table 6.5. Preliminary Cost Estimate for Rehabilitation and Reconstruction of Drainage System

Category	Cost Items	Works	Amount (Rp, million)
Urgent Recover (Priority 1 and 2)	Direct construction cost	Pumping facilities	83,070
		Primary drains	2,693
		Water gates	140
		Retardation ponds	14,310
	Physical contingency		10,021
	Price escalation		10,021
	Engineering services		
		Subtotal	130,276
Rehabilitation (Priority 3 and 4)	Direct construction cost	Pumping facilities	36,050
		Primary drains	1,870
		Water gates	80
	Physical contingency		3,800
	Price escalation		3,800
	Engineering services		3,800
		Sub total	49,400
Reconstruction (Priority 5)	Direct construction cost	Pumping facilities	96,780
		Primary drains	17,450
		Water gates	80
		Retardation pond	22,590
	Physical contingency		13,690
	Price escalation		13,690
	Engineering services		13,690
			Sub total
		Subtotal	
Rehabilitation and reconstruction of dykes and floodwall along major rivers			95,000
Total			452,646

Source: JICA Study Team

The cost for rehabilitation and reconstruction of dykes and floodwall is based on Concept Note submitted by the Embassy of Japan to BRR.



## (2) Tentative Implementation Plan

As noted in the above rehabilitation of drainage system is matter of urgency because of marching rainy season and high tide. There is however many so many works need to be undertaken. It is there for considered to execute such works in order of priority as follows :

- Priority 1 : Urgent recovery of drainage pump stations Nos.1,8,4,6 and primary drains for a length of 766m (Drain IDs 1.3, 11.1)
- Priority 2 : Normalization of primary drains of approximately 4,620 m (Drain IDs 2.1, 4.1-2, 6.2, 7.1, 9.1-3, 9.5-6, 11.2, 12.1-3)
- Priority 3 : Rehabilitation of pumping stations Nos. 2, 3.5 and 7 and rehabilitation of primary drains for a length of 1,896m (Drain IDs 1.1-2, 13.5-6)
- Priority 4 : Rehabilitation of primary drains for a length of 3,691 m (Drain IDs 4.1.1,4.34,6.1,6.3-4,8.1)
- Priority 5 : Reconstruction of primary drain for a length of 622m (Drain IDs 17.1-4, 19) and new drains for a length of 8,108m (Drain IDs 1.1, 1.5, 3.5-3.7, 12.5, 14.13, 15.14, 16.1-2, 17.1-4, 19)

The implementation schedule of there habilitation and reconstruction plan is set up as shown in Figure 6.4. taking in to account of the above priority.

Figure 6.4. Tentative Implementation Schedule for Urban Drainage Sector

Description	2005	2006	2007	2008	2009
Urgent Recovery (Priority 1 and 2)	■				
Rehabilitation Works (Priority 3 and 4)		■			
Reconstruction (Priority 5)			■		
Rehabilitation and reconstruction of dykes and floodwall along major rivers/floodway	■				

Source: JICA Study Team

In addition to the above, it is urgently required to implement the rehabilitation and reconstruction works of dykes and floodwalls of the major rivers/floodway in order to prevent inundation of the city land due to flow of river flow through destroyed/broken portion during coming rainy season. Fortunately it is reported that such urgent rehabilitation/reconstruction works has been committed to be executed by the Government of Japan at the time of preparation of this report and are scheduled to complete with in a year.

## (3) Annual fund requirement

The annual fund requirement is estimated based on the project cost estimate and implementation schedule as shown below :

Table 6.6. Annual Fund Requirement for Drainage System

Components	(Unit Rp, million)				
	2005	2006	2007	2008	2009
Urgent Recovery (Priority 1 and 2)	32,569	65,138	32,569		
Rehabilitation Works (Priority 3 and 4)		14,820	34,580		
Reconstruction (Priority 5)			35,594	71,188	71,188
Rehabilitation and reconstruction of dykes and floodwall along major rivers/floodway	28,500	66,500			
<b>Total</b>	<b>61,069</b>	<b>146,458</b>	<b>102,743</b>	<b>71,188</b>	<b>71,188</b>

Source: JICA Study Team

### **6.5.2 Drainage Plan from “River Management and Coastal Management Project”**

Flood management plan study and post disaster city drainage arrangement Study completed in “River Management and Coastal Management Project” carried out by PT. Wahana and PT. Global until the detail design phase.

#### **(1) Problems Identification**

Flood or/and inundation factors in several post disaster Banda Aceh City area can be basically identified into:

- a. River existing capacity (main drain) is relatively small caused by destructed riverbank (land slide), and massive mud sediment caused by halted water flow/blocked river outlet
- b. In low topographic area such as Krueng Titi Panjang, the drainage must be supported with water pump system, the condition worsen by dysfunctional canal for collector drain, long storage and the absence of retarding pond.
- c. Unmanaged and uncontrolled drainage system caused by city drainage partial development
- d. The drainage are buried under or heavily damaged after by disaster.
- e. Water tide affected coastal area, un-optimized river capacity.
- f. Tunnel base elevation relatively same with ground surface elevation that the channel became less functioned.
- g. The settlement area change from low level ground into inundation area.
- h. Banda Aceh City condition in the low ground area are potentially troubled with flood overflow from hills area in Aceh Besar, the higher ground which mostly un developed yet.

#### **(2) Problem Solving Concept**

To handle the flood and/or inundation problems in Banda Aceh City, there must be integrated, effective, and efficient problem solving concept. The concepts are :

- a. Flood Canal in the south side of the Banda Aceh City to brake the flood water volume, and to protect Banda Aceh City from the flood overflow from the higher ground area, directed into Kr. Raba
- b. The city drainage system must be functioned as the collector drain and long storage, that they will be able to intercept and retain the water volume/flood in the water tide.
- c. To optimize/normalize the river according to the city river system and drainage plan.
- d. The building of retarding basin and retarding pond supported with water pump system.
- e. To secure the river bank area and to reduce the flood water volume (surface overflow) by managing the water overflow volume to be absorbed into the ground.

#### **(3) City Flood Management and Drainage Management**

##### **a. Flood Control Plan**

Based on the flood/inundation problem solving concept, the flood management includes:

- (1) Building the flood canal in the south side of the Banda Aceh City (Floodway) to direct the flood water out of the inner city rivers that usually cause flood/inundation. The floodway are:

##### **b. City Main Drainage Management Plan**

The city drainage management plan includes:

- (1) The drainage system of Banda Aceh city divide in 7 Zone main drainage Zone 1, bordered by Kr. Neng and Kr Doy

- (2) Building saline water dyke barrier in the coastal area to prevent the sea water tide to permeate to the upland (construction done by BRR).
- (3) Building the water gate, retarding pond, and water pump on the tunnel outlet to be use as the main drainage tunnel.

The water gate and water pump arrangement:

- **Zone 1**

- Tunnel Outlet in Kr. Neng supported with 8.5 Ha width retarding pond, 8 unit of 1.5 m width water gate, 2 unit of water pump with the capacity: 4 m<sup>3</sup>/sec.
- Tunnel Outlet in Ulee Lheu area supported with 2 unit of 1.5 m width water gate and 1 unit of water pump with the capacity: 1 m<sup>3</sup>/sec.
- Tunnel Outlet on Kr. Doy river, supported with 2 unit of 1.5 m width water gate, and 1 unit of water pump with the capacity: 1 m<sup>3</sup>/sec.

- **Zone 2**

There are 4 main drainage tunnel outlet connected to each other as long storage. Each outlet equipped with 2 unit of 1.5 m width water gate, and 1 unit of water pump with the capacity: 1 m<sup>3</sup>/sec. The tunnel outlet in Lampaseh area supported with 1.5 Ha width retarding pond.

- **Zone 3**

There are 3 main drainage tunnel outlet connected to each other as long storage. Each outlet equipped with 2 unit of 1.5 m width water gate, and 1 unit of water pump with the capacity: 1 m<sup>3</sup>/sec. The tunnel outlet in lampulo area supported with 1.5 Ha width retarding pond.

- **Zone 4**

There are 1 main drainage tunnel outlet as long storage, equipped with 2 unit of 1.5 m width water gate, and 2 unit of water pump with the capacity: 0.6 m<sup>3</sup>/sec.

- **Zone 5**

To temporarily intercept and retain the flood water volume and to reduce the flood highest level in zone 5, it is necessary to build retarding pond with 4.5 Ha width, which is the total width of Kr. Titi Panjang normalization, width: 25 m, length: 1000 m, depth: 3 m as drain collector, and retarding pond with width: 100 m, length: 250 m and depth: 2 m, that it will be able to intercept and retain the water capacity of: 125.000 m<sup>3</sup>, and its equipped with 10 unit water gate, 2 unit of water pump with the capacity: 4 m<sup>3</sup>/sec. each.

- **Zone 6 and 7**

The water gate nor water pump is not required in zone 6 and 7, there are no water tide effect in these zones.

The city drainage management from The River Management and Coastal Management Project shown in figure 6.5.

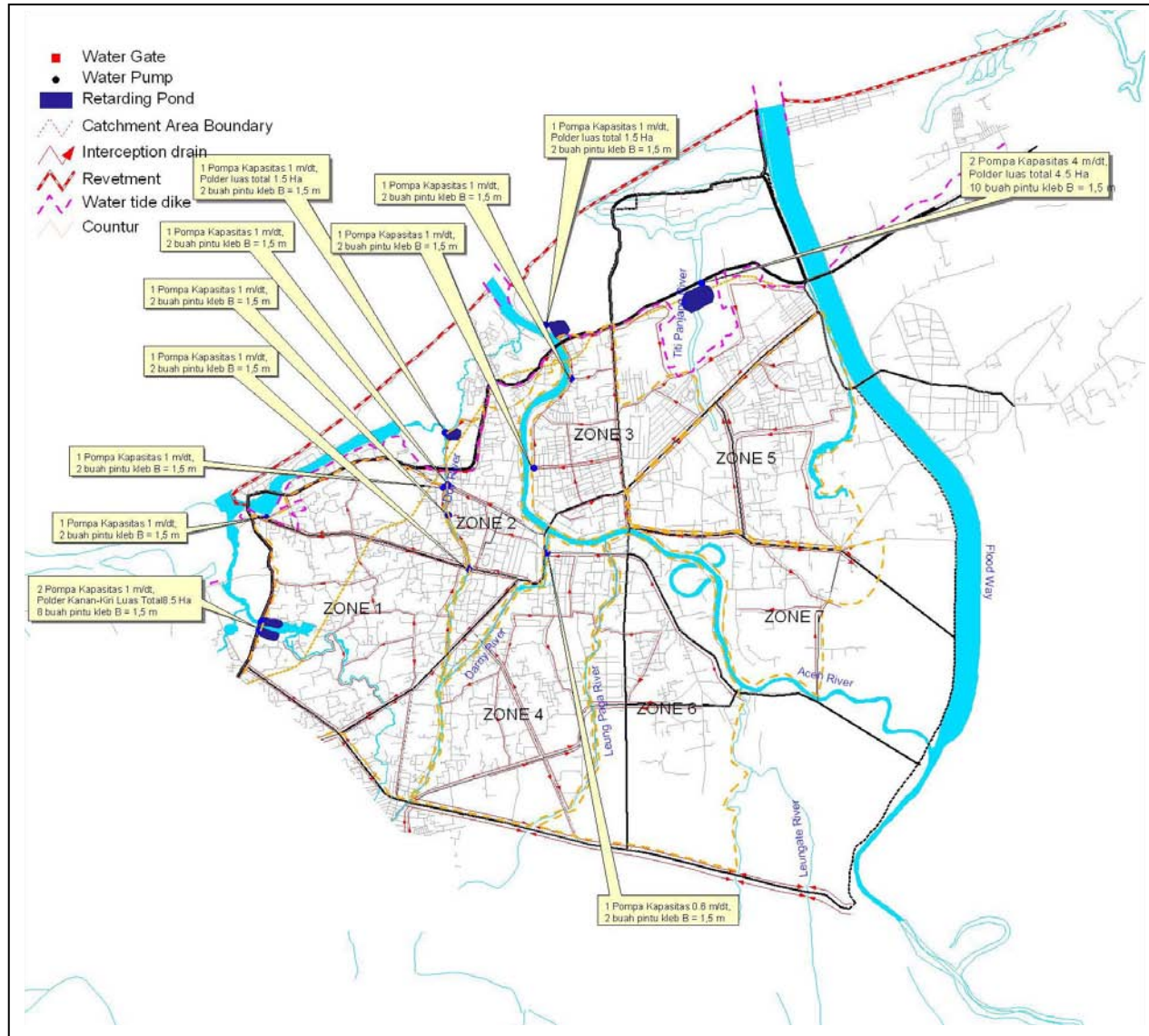


Figure 6.5. Banda Aceh City Drainage Management Plan

**c. Conservation**

Besides the drainage network and system plan, it is also necessary to do the effort to reduce the water flood volume (surface overflow), the ground water conservation and river bank area protection. The management done in several ways:

(1) River Boundary Line (“GSS”) and Coastal Boundary Line

River as the flood management channel and main drainage should have been protected from all kinds of problems such as building and housing. Therefore, river ownerships must be restricted by River Boundary Line.

For the Flood Way and Aceh River as flood Management River, River Boundaries Line in the downstream planned to 30 m in river right and left side. River Boundary Line plan could be seen on figure 6.6.

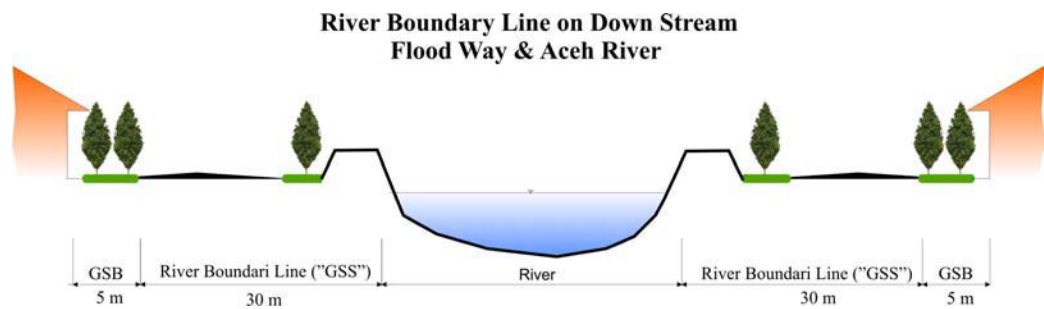


Figure 6.6 River Boundaries Line on Down Stream Flood Way & Aceh River

Meanwhile, Titi Panjang, Leung Paga, Daroy, Doy and Neng River as city main drainage channel, River Boundary Line planned minimal 15 m in river right and left side. River Boundaries Line could be seen on fig 6.7.

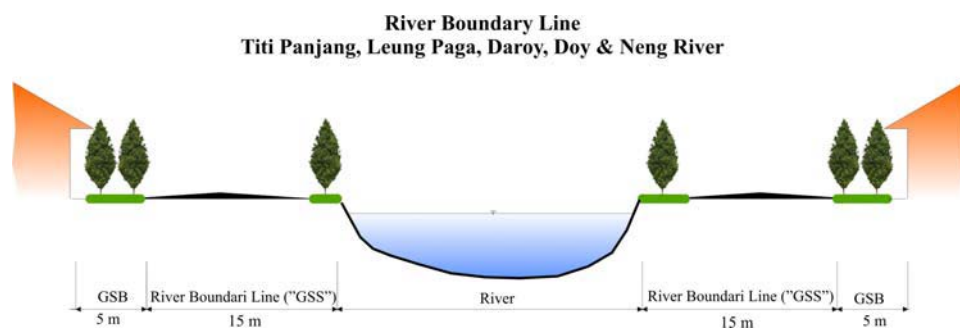


Figure 6.7 River Boundaries Line on Titi Panjang, Leung Paga, Daroy, Doy & Neng River

To prevent from land use distracting the coastal line preservation and ecosystem, there should be some restriction about coastal boundary line. Coastal Boundary Line planned proportional to coast shape and conditions (outer coast line to water tide dike

or coastal road)

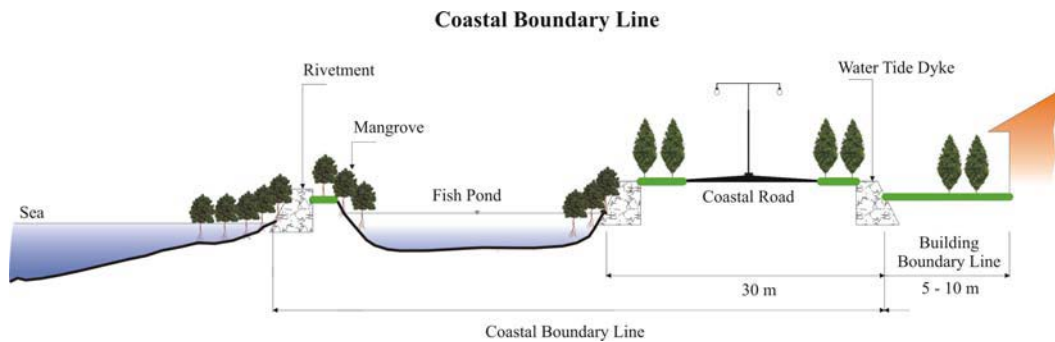


Figure 6.8. Coastal Boundary Line

- (2) Build absorb well.  
To reduce flood debit and ground water conservation is needed a place to absorb rainwater into the ground.
- (3) Urban forest  
To lessen the water surface split out and ground water conservation needed water diffusion area. Effort taken with area conservation through town forest. Urban forest planned according to plan of land use at this study.
- (4) Check dam developing in river upstream area to reduce the sedimentation in the river downstream area.
- (5) Land conservation in upstream area through existing forest preservation as water absorbent location.
- (6) Preserving swamp/fishpond interception and retention area.

## 6.6 WASTE WATER TREATMENT AND DISPOSAL

### A. BAC

The waste water was wholly resorted to on-site sanitary, with effluent that accumulated was extracted once a year by The Department of Sanitary and Park. The existing effluent Treatment Plant (STP) is situated in Gampong Jawa.

Table 1.32. STP capacity

Description	Retention Time (day)	Storage Capacity (m3)	Treatment capacity (m3/day)
STP Existing	60	3382	56

Source: JICA Study Team, 2005

## **B. Surrounding Area**

There is no STP in Aceh Besar.

## **6.7 SOLID WASTE MANAGEMENT**

### **1. BAC**

The residual life of existing landfill in Gampong Jawa is 2 years. Planning criteria with rehabilitation target set for 2006 and reconstruction target set for 2009 can progress faster with pre-selection (32 alternatives) and selection (4 alternatives) of sanitary landfill site with a residual life of 20 years and areas covering 15 - 25 Ha.

### **2. Surrounding Area**

Solid waste in surrounding area is self-collected and handled by the community. The government does not conduct any form of solid waste management in this area.

## CHAPTER 7 HOUSING, EDUCATION AND HEALTH SERVICES

According to URRP Study, the earthquake and tsunami on December 26, 2004 damaged 44,544 houses, both wooden as well as reinforced concrete buildings, particularly those located within a radius of 2 km from the shoreline. Out of 44,544, approximately 67% are reportedly destroyed. This widespread destruction had caused 65,000 people to become internally displaced people.

The slow progress of house construction all over the disaster area has forced these homeless people to continue living in shelters such as barracks, temporary living centers, staying in relatives' house, even in tents. These temporary shelters, especially tents, and their environment, are not designed to accommodate such prolonged stay and had begun to deteriorate, exposing the refugees to health risks.

Table 7.1 Temporary Accommodation

<b>Accommodation</b>	<b>Number</b>
Tent	6,921
Temporary House	2,892
Rental House	55,653
Mosque	34
<b>TOTAL</b>	<b>65,500</b>



## **CHAPTER 8 ENVIRONMENTAL CONDITIONS**

Some area environment conditions understanding needed as technically opinion for the planning of some area and building. Even sometimes local wiser have putted the environment aspect as part of the cultural if those things are continuously happening,so that cultural value are result from community adaptation to their physical environment.

The most things that being a considerations are the climatology and hidrology aspect. Climatology aspect will give an effect to the heat (degrees) and wind consideration.Both thing will influencing the human thermal comfortably in their movement in a space/room.Whereas, hidrology aspect will influencing to clean water supply considerations planning and will be a disaster to human being if overloading the human ability to overcome their movement, such as water overflowing when rain seasons.

## CHAPTER 9 EXISTING DEVELOPMENT PLAN AND ACTIVITIES

### 9.1. Existing Development Plan

#### (1) Regional Plan (RTRW NAD Province)

Regional Planning is used as the guidance to direct the development implementation, by sector or inter city/regency area in Nanggroe Aceh Darussalam Province.

The study includes: (i) Fact and analyze arrangement, (ii) Master Plan Direction and Policy Observation, (iii) General illustration of NAD Province area, (iv) Analyzes of Regional Function Development and Land Use Focus.

Several Government policies correlated with BAC Master Plan arrangement are:

- a) National Master Plan Policy (RTRWN), based on Government Regulation No.47 year 1997, decided that there are several main development zone in NAD Province divided into three (3) mainstay zone.
- b) Regional Economic Cooperation Policy, Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT), determined Banda Aceh as industrial and commercial basis.
- c) Integrated Economic Development Policy (KAPET) of Sabang.

The designation of Sabang as a KAPET is based on Presidential Decree No. 89 Year 1996, which was subsequently modified in Presidential Decree No. 9 Year 1998. In 2000, KAPET Sabang was repositioned as *Free Trade Zone* and *Free Port Zone*, based on Presidential Instruction No. 2 Year 2000 and Law no. 37 Year 2000 regarding the Government Regulation as Law No. 2 Year 2000 regarding Integrated Free Trade and Free Port Zone (KAPET) Sabang

KAPET Sabang consists of the entire Sabang City and parts of Aceh Besar Regency, consisting of the following islands:

- Sabang City, covering an area of 119 km<sup>2</sup>, consisting of Weh, Rubiah, Klah, Seulako and Rondo Islands.
- Pulo Aceh District, Aceh Besar Regency, with a total area of 82 km<sup>2</sup>, consisting of Breuh, Nasi and Teunom Islands.

#### 1. Sabang Free Trade Zone

Based on Undang-Undang no. 37 Tahun 2000 regarding The Development of Sabang Island as a Free Trade and Free Port Zone, the area which was formerly designated as Sabang Integrated Economic Development Zone (KAPET) is now designated as Sabang Free Trade Development Zone. This zone consists of Sabang City and Weh Island.

The purposes of Sabang Free Trade Development Zone are as follows: 1) to increase the economic development of NAD province particularly to accommodate exports of agricultural, plantation, fishery products and tourism activity; 2) to increase the function of nationally strategic Sabang Port. The port borders with Malaysia, therefore it is intended to become the gateway of imported products in order to fulfill the needs of Sumatera Islands inhabitants.

The objectives of Sabang Free Port Development are as follows: 1) to become the new growth center for agricultural, plantation, farming commodities and tourism to balance the growth of Lhokseumawe Port in the eastern coast which is focused for the export

and import of mining, fertilizer and cement products; 2) as a frontier zone bordering with neighboring country it is imperative to protect the territorial security of Indonesia.

The strategy of Sabang Free Port Development is as follows: 1) Develop agricultural, plantation and fishery outlets in Aceh to promote the growth of export commodity volume in Sabang Free Port. The outlets is proposed to be built in KAPET Bandar Aceh Darussalam; 2) Construct facilities and supporting network to conform to the minimal standard of a free port; 3) Establish a Sabang Autonomous Authority whose duty is to develop Sabang Free Port to promote the rapid growth of cargo volume and investments; 4) Conduct comparative study in Batam as an established free trade zone.

## **2. Bandar Aceh Darussalam Integrated Economic Zone (KAPET)**

KAPET Bandar Aceh Darussalam consists of Aceh Besar Area, Pidie, Bireun, Aceh Utara and Aceh Timur, with its hinterland for the central and west/south areas.

The purpose of KAPET Bandar Aceh Darussalam Development is to integrate the economic development in Aceh land and promote the development of Sabang Free Port.

The objectives of KAPET Bandar Aceh Darussalam Development are as follows: (i) Develop agricultural, plantation and fishery outlets in each regency/city that belongs to KAPET Bandar, (ii) Open a transportation route to connect Aceh eastern and western coasts and the southern to the central area. In this way it will facilitate commodity flow and distribution of agricultural, plantation, and fishery consumables; (iii) Establish a Coordinating Board for KAPET Bandar Aceh Darussalam to integrate the Master Plan with development plans of regencies/cities in an integrated inter regencies/cities integrated economic zone.

- (d) Policy on Leuser Ecosystem Zone Management (KEL), is the base to maintain, preserve and rehab the Leuser Ecosystem zone function.
- (e) Sumatra's Regional Master Plan Policy (RTRWS), is the base of development integration and cooperation across the province and in all sectors, and to give guidelines of land use conflict of between sectors and zones.
- (f) Administrative Area Expansion of NAD Province Policy, decide that in the year 1996 – 2003 period, the NAD administrative area expand into 21 regency/city.

### **(2) Existing City Master Plan**

The BAC administration established its City Master Plan (2001-2010) in March 2001. It is of multi-core type with linear growth along the major roads

This city plan focuses on; (i) harmonizing and optimizing land use, (ii) providing infrastructure and facilities properly, (iii) providing efficient transport system, (iv) improving environmental quality as well as preservation.

According to the plan, the population and its density are projected at 307,695 persons and 52 people per ha respectively in the year 2010. The number of households is forecasted at 61,539 based on the average family size of 5.

The city administration unfortunately abandoned the implementation of this plan because of disaster.

### (3) Blueprint- BAPPENAS

The BAPPENAS was appointed to prepare “The Master Plan for Rehabilitation and Reconstruction for Aceh Region and Nias” (called “Blueprint”) for the people of Aceh and North Sumatera within three (3) months in coordination among the government line agencies, donors, local governments and NGO’s.

BAPPENAS published “Blueprint” in March 2005. The Blueprint indeed covers various aspects necessary for rehabilitation and reconstruction of the affected areas, and sets to implement the established plan in integrated approach in three (3) stages: (i) Emergency Relief Stage (initial 3 months), (ii) Rehabilitation Stage (after 3 months to 2006), (iii) Reconstruction Stage (2007 to 2009).

The Blueprint proposes 9 zonings for BAC. It however appears that the Blueprint pays less attention to population increase and disaster preparedness. Under the present study, the zoning was reviewed in the light of the proposed city development concept, population growth, available land resources and disaster preparedness. As a result, it is proposed to divide the city area into four (4) zones with keen attention to disaster preparedness.

### (4) Study on the Urgent Rehabilitation and Reconstruction Plan (URRP) for Banda Aceh City

The study is implemented by The Japan International Cooperation Agency (JICA) under agreement with BAPPENAS, during the period from March 2005 to August 2005

The study recommendation for the Plan to restore pre-tsunami social and environmental conditions of Banda Aceh City and to establish the city plan with disaster preparedness for future development of the Banda Aceh City.

The objectives of the study are: (i) Formulation of URRP for BAC with target year 2009, (ii) Designing, Cost Estimation and Monitoring of Quick Impact Projects, and (iii) Establishment of Aceh Rehabilitation and Reconstruction Information System (ARRIS)

The Study Area covers the entire administrative area of Banda Aceh City (approximately 61 Km<sup>2</sup>) and its surrounding.

The city area is proposed to be classified into four (4) zones with keen attention against disaster preparedness, (i) Coastal Zone, (ii) Eco Zone: evacuate area, (iii) Traditional City Center Zone, (iv) Urban Development Zone: emergency base-Disaster Mitigation Center.

## 9.2. Rehabilitation and Reconstruction Activities in Progress

Based on BRR information on Medio February 2006, the under-listed projects have been approved by BRR for actual implementation. The under-listed projects only focus on Spatial Plan and Infrastructure Program, shown on the table below.

Table 9.2.1 Rehabilitation and Reconstruction Activities in Progress

No	Project Title	Location	Project Status	Project Cost/ Request (USD)	
1	Livelihood Revitalization (Cash-For-Work) for Disaster-Affected Families in Aceh (Donors: USAID/OFDA, UNDP, DAI, Private Sources).	All district in BAC	Design	731,679	
2	IDRF-funded Livelihood Program - Islamic Relief.		Ongoing	174,524	
3	Supporting Recovery of Small Industries and Trades in Banda Aceh.		Ongoing	625,071	
4	Support to Restoring Sporting Facilities in Nanggroe Aceh Darussalam.		Ongoing	64,118	
5	AIPRD Aceh Rehabilitation Program: Expanded Support for Construction.		Ongoing	11,450,382	
6	Logistics support (storage, boat and truck transportation) for all humanitarian organizations.		Ongoing	2,870,370	
7	Banda Aceh Flood Relief Flow Valves & Pump Stations.		Fisblty. Study	4,500,000	
8	AIPRD Aceh Rehabilitation Program: Expanded Support for Construction.		Ongoing	1,893,250	
9	Spatial Planning Environmental Management.		Ongoing	1,250,000	
10	The Study on The Urgent Rehabilitation and Reconstruction Plan for Banda Aceh City (URRP).		Design	866,000	
11	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.	BaituRahman District, BAC	Ongoing	316,338	
12	Development & Construction of "PASAR ACEH" Complex.		Ongoing	12,320,900	
13	Construction of Intensive Care Unit of the BLPKM Hospital; Construction of Emergency Room and equipping of the Permanta Hati Hospital; Equipping the Emergency Room of the BLPKM Hospital; Equipping Nurbarhari Clinic.		Ongoing	179,500	
14	Rehabilitation of the City Council.		Ongoing	395,580	
15	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.		Design	440,234	
16	City Park Restoration, Banda Aceh.		Ongoing	351,985	
17	Banda Aceh-Meulaboh Road and Bridge Project.		District to be defined –BAC	Design	1,000,000
18	Environmental Services Delivery-Drinking Water Supply and Sanitation.			Design	750,000
19	Municipal Finance.	Design		125,000	
20	Homes & Community Buildings – Banda Aceh.	Ongoing		20,314	
21	Support To The Reconstruction Of The Aceh Land Administration System.	Ongoing		179,377	
22	Emergency Water and Environmental Sanitation for Nanggroe Aceh Darrussalam and North Sumatra Provinces.	Ongoing		1,599,167	
23	Rehabilitation of wells.	Ongoing		76,880	
24	Rehabilitation of Lambaro Water Treatment Plant.	Design		4,177,215	

No	Project Title	Location	Project Status	Project Cost/ Request (USD)
25	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.	Jaya Baru District, BAC	Design	440,234
26	Shelter and Water and Sanitation.		Design	7,000,000
27	Tsunami Disaster Response Project.		Ongoing	840,000
28	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.		Ongoing	63,268
29	Rebuilding Acehese Communities through Shelters (and Livelihood Support).		Ongoing	81,000
30	Reconstruction of Punge Blang Cut Village.		Ongoing	1,607,300
31	Cash for Work (CfW)		Design	800,000
32	Support for Return and Village Recovery.		Design	1,000,000
33	Rehabilitation and Reconstruction of Housing and Human Settlements.		Design	6,329,114
34	Tsunami Disaster Response Project.	Kuta Alam District, BAC	Ongoing	875,000
35	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.		Ongoing	316,338
36	Banda Aceh/Aceh Besar: Permanent Housing.		Ongoing	416,666
37	Rebuilding Aceh Community Together(Re:Act).		Design	924,180
38	ACEH RELIEF.		Compltd	300,000
39	Banda Aceh/Aceh Besar: Water/Sanitation.		Ongoing	144,000
40	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.	Kuta Raja District, BAC	Ongoing	316,338
41	Banda Aceh/Aceh Besar: Permanent Housing.		Ongoing	1,666,664
42	Banda Aceh/Aceh Besar: Water/Sanitation.		Ongoing	216,000
43	Aceh-Nias Settlements Support Programme (ANSSP).		Ongoing	5,075,034
44	Canal wall repair in Lampaseh Kota, Banda Aceh (CPL71 PL115).		Ongoing	33,000
45	Habitat (housing, water & sanitation) for fishing village communities.		Ongoing	971,386
46	Earthquake and Tsunami Emergency Support Project (ETESP); Housing component.		Ongoing	495,745
47	Sanitation and Park Department, Banda Aceh Municipality.		Ongoing	866,000
48	Housing Construction “Perumahan Cinta Kasih “ Tzu chi in Nanggroe Aceh Darussalam.	Lueng Bata District, BAC	Ongoing	12,333,334
49	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.		Design	440,234
50	Recycle Aceh.	Meuraxa District, BAC	Design	462,000
51	Banda Aceh/Aceh Besar: Permanent Housing.		Ongoing	4,166,660
52	Banda Aceh/Aceh Besar: Water/Sanitation.		Ongoing	756,000
53	Aceh-Nias Settlements Support Program (ANSSP).		Ongoing	1,925,013
54	YBI Housing Reconstruction Project.		Ongoing	834,000
55	Ulee Lheue Port Rehabilitation.		Ongoing	2,000,000
56	Tsunami Disaster Response Project.	Syiah Kuala District, BAC	Ongoing	1,715,000
57	Transitional Housing In Nanggroe Aceh Darussalam.		Ongoing	
58	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.		Ongoing	316,338

No	Project Title	Location	Project Status	Project Cost/ Request (USD)
59	Banda Aceh/Aceh Besar: Permanent Housing.		Ongoing	1,249,998
60	Rebuilding Acehnese Communities through Shelters (and Livelihood Support).		Ongoing	5,400
61	Reconstruction of Rukoh Village.		Ongoing	2,250,000
62	Reconstruction and Road Repairs in Alue Naga Village.		Ongoing	3,593,400
63	Syiah Kuala Lecturers' Houses.		Ongoing	130,000
64	Yayasan Obor Berkat Indonesia -Health Project in Banda Aceh and Aceh Besar, Housing Project in Aceh Besar and Aceh Jaya, Livelihood project in Aceh Jaya.		Ongoing	600,000
65	Water supply, sanitation and hygiene promotion in temporary location centers (TLCs) in Aceh Besar and Schools in Banda Aceh.		Ongoing	128,571
66	Rebuilding of Kindergarten.	Ulee Kareng District, BAC	Ongoing	98,377
67	Food and non food distribution, reconstruction, livelihoods, child protection, Water Sanitation.		Ongoing	5,000
68	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.		Design	880,469
69	WFP Logistic.	All District in Sabang City	Ongoing	4,920,000
70	Watsan, and to provide healthcare as well as general welfare for children and their families affected by the Tsunami, and the resulting damage, on the island of Pulau Weh.	District to be defined - Sabang City (SC)	Design	350,000
71	Habitat (housing, water & sanitation) for fishing village communities.	Suka Jaya District, SC	Ongoing	45,536
72	Balohan Ferry Port Rehabilitation.		Ongoing	900,000
73	Tsunami Disaster Response Project.	Suka Karya District, SC	Ongoing	840,000
74	Habitat (housing, water & sanitation) for fishing village communities.		Ongoing	212,679
75	Rehabilitation of Water pump.		Design	253,165
76	Reconstruction & Rehabilitation Buildings, at Dept of Agriculture Dinas Perkebunan.		Ongoing	19,670
77	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.		Design	880,469
81	Cash for Work (CfW).		Design	800,000
82	Support for Return and Village Recovery.		Design	1,000,000
83	WFP Logistic.	All District in Aceh Besar (AB) Regency	Ongoing	4,920,000
84	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.	Baitusalam District, AB Regency	Ongoing	316,338
85	Banda Aceh/Aceh Besar: Permanent Housing.		Ongoing	326,102
86	Rebuilding Acehnese Communities through Shelters (and Livelihood Support).		Ongoing	319,000
87	AIPRD Interim Governance Program.		Initial ph	1,262,626
88	International Water Distribution in IDP Camps in Aceh Besar.		Ongoing	37,248
89	Construction of Earthquake Resistant Homes.		Ongoing	497,280
90	Housing, reconstruction and rehabilitation in Aceh Besar, Aceh		Ongoing	15,117,000

No	Project Title	Location	Project Status	Project Cost/ Request (USD)
	Jaya and Nias Utara (CPR 21&42).			
91	Provision of safe water and sanitation facilities for IDP populations living in TLCs and tent camps (EMW5).		Ongoing	99,000
92	Construction proram of permanent house, school, Health facility, mosque rehabilitation Gampong Aneuk.		Ongoing	1,722,000
93	Earthquake and Tsunami Emergency Support Project (ETESP); Housing component.		Ongoing	1,204,388
94	Shelter/Construction.		Compltd	1,055
95	Water Sanitation.		Ongoing	242,650
96	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.		Ongoing	440,234
97	Cash for Work (CfW).		Design	800,000
98	Tsunami Disaster Response Project.		Ongoing	840,000
99	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.		Ongoing	316,338
100	Provision of safe water and sanitation facilities for IDP populations living in TLCs and tent camps (EMW5).	Darul Imarah District, AB Regency	Ongoing	198,000
101	Food and non food distribution, reconstruction, livelihoods, child protection, Water Sanitation.		Ongoing	6,000
102	Yayasan Obor Berkati Indonesia -Health Project in Banda Aceh and Aceh Besar, Housin Project in Aceh Besar and Aceh Jaya, Livelihood project in Aceh Jaya.		Ongoing	15,000
103	Building to house 4 Labs.	Aceh Jaya District, AB Regency	Ongoing	158,250
104	Reconstruction and Community Recovery Program in Banda Aceh, Indonesia.		Design	440,234
105	Grant Agreement with Badan Metereologi dan Geofisika Department (BMG) of Banda Aceh for the provision of basic operating equipment.		Completed	5,880
106	Tsunami Disaster Response Project.		Ongoing	875,000
107	Environmental Health Interventions for survivors of the December 2004 Tsunami and the March Nias earthquake.		Ongoing	316,338
108	Rebuilding Acehnese Communities through Shelters (and Livelihood Support).	Darussalam District, AB Regency	Ongoing	202,500
109	Housing, reconstruction and rehabilitation in Aceh Besar, Aceh Jaya and Nias Utara.		Ongoing	17,000
110	House reconstruction and rehabilitation in Tanjung Deah Village.		Ongoing	1,350,940
111	Yayasan Obor Berkati Indonesia -Health Project in Banda Aceh and Aceh Besar, Housing Project in Aceh Besar and Aceh Jaya, Livelihood project in Aceh Jaya.		Ongoing	10,000
112	Rehabilitation of wells Ongoing.	Indrapuri District, AB Regency	Ongoing	10,995
113	Transitional Housing In Nanggroe Aceh Darussalam.		Ongoing	1,854,000
114	Provision of Submersible Water Supply Pumps.	Ingin Jaya Districts, AB Regency	Design	350
115	Improving Transport for Recovery and Reconstruction Through Rehabilitation Works at Lanud Military Airport in Banda Aceh.		Ongoing	11,355
116	Gle Taron Water Line - West Banda Aceh.		Ongoing	100,000
117	Rehabilitation of Siron II water treatment plant.		Ongoing	50,000
118	Rehabilitation of Lambaro water treatment plant.		Ongoing	3,902,400



<b>No</b>	<b>Project Title</b>	<b>Location</b>	<b>Project Status</b>	<b>Project Cost/ Request (USD)</b>
119	Water supply, sanitation and hygiene promotion in temporary location centers (TLCs) in Aceh Besar and Schools in Banda Aceh.		Ongoing	257,143
117	Reconstruction Waterworks.		Ongoing	422,333
118	Provision of Submersible Water Supply Pumps.	Kota Janto, AB Regency	Design	350
119	Upgrading Spring Jantho.		Ongoing	1,081,886

Source: BRR information, Mid February 2006

## CHAPTER 10 PUBLIC SERVICES

### 10.1 ELECTRIC POWER SUPPLY

Banda Aceh’s electric power supply relied on diesel powered generator. Prior to the disaster, the power supply was quite adequate. The power network and lighting infrastructure was quite heavily damaged after the disaster, particularly in disaster areas.

Electricity conditions in BAC is 95% from burden top 25 MW. Before tsunami happen, customer amount is 74.000. After the tsunami, the customer connected to electricity is 32.000 customer from 34.000 customer available connection.

### 10.2 TELEPHONE SERVICES

Telephone services in Banda Aceh city and surrounding areas was provided by PT. Telkom. The telephone network showed significant growth, particularly in public and social facilities, economic, governmental, and residential areas. The network is quite heavily damaged by the disaster, particularly in disaster areas.

After the disaster, telephone customer network in BAC are 64% recovered and serving 24.039 SST. Meanwhile flexi customer reaching 3.200 customers.

Telephone facilities prepared including coin/card public telephone, 35 unit, telephone shop(wartel)/kiospon 105 unit, and internet shop/café (warnet)19 unit.

### 10.3 POSTAL SERVICE

Postal service in Banda Aceh city and surrounding areas was served by 22 units of post offices, which were distributed according to its area of coverage. It consisted of several infrastructure and facilities, such as post office, postal services car and motorcycle. Prior to the disaster its level of service was 100%, and dropped to 40% after disaster hit the city. This degradation is due to the heavy level of damage suffered by some postal facilities, particularly in disaster areas. The postal service data is described in Table 2.40.

Table 10.3.1 Postal Service in Banda Aceh City

No	Facility	Total (unit)	Good (unit)	Heavily Damaged (unit)
1	Post Office	22	14	8
2	Car	6	6	-
3	Motorcycle	39	36	3

Source: Banda Aceh Postal Service, 2006

## **CHAPTER 11 GOVERNMENT SERVICES**

The Government of Indonesia recognizes the complexity and magnitude of the decentralisation policy, and is aware that the implementation of the policy will need commitment and long-term effort of all stakeholders involved. Having the regulatory framework for decentralization in place is just the starting point – making the implementation of regional autonomy run smoothly and with the expected outcomes requires learning and adjustment not only by regional administrators but also by members of the regional councils, local communities, NGOs and civil society organisations in the regions. It also requires the adjustment of the working system and working mechanisms of the central government, and the establishment of a different pattern of relationships with the regions by sectoral ministries and other relevant central government agencies. It requires institutional reform at all levels, new skills and qualifications of government personnel, and new ways of communication between the public sector and the citizens. Proper monitoring and evaluation will be necessary to identify successes and failures and, where necessary, to adjust procedures and mechanisms.

### **11.1 Central Government Unit**

- Overall systems improvement
- Improved co-ordination between departments
- Financial management
- Revenue collection/mobilization
- Planning and decision making processes
- Office automation
- Human resource development/ motivation

### **11. 2 Provincial Government Unit**

- Co-ordination between local government and other government levels/entities
- Coordination among local governments (e.g. in a metro area)
- Transfer of resources from higher levels to local governments such as block grants etc.
- Replacement of paper transactions

### **11.3 City Government Unit**

- Citizen's charters/service guarantees
- Formalizing and regularizing participation in planning and decision-making
- Partnerships with the private sector to improve service delivery or local government
- Management systems
- Neighborhood watch programs
- Access to decision makers