

### **2.2.3 QIP for Emergency Repair Works of Aceh River and Floodway**

#### **(1) Design Condition**

The earthquake and subsequent Tsunami caused various and serious damages on basic infrastructure. Dykes along the Aceh River and its tributaries are one of very important infrastructure and in fact protect the Banda Aceh City from flooding and inundation during high tide season. Parts of them were swept away or cracked or collapsed at many locations owing to the earthquake and Tsunami, and as subsequence the areas along such parts are submerged and/or subject to inundation frequently.

The Project aims at repairing the damaged dykes to their original situation urgently in order to protect the city area from flooding and high tide. With implementation of the Project the present inundation areas will be secured and contribute to return of affected people and other development activities.

The scope of works comprises (1) design works and cost estimate, and (2) preparation of technical report for emergency repair works of the Aceh River and floodway.

#### **(2) Detail Design**

##### **1) Basic Design Policies**

Prior to commencement of the design works, the JICA Study Team made a number of discussions about repairing/rehabilitation concepts with the Indonesian counterpart agency concerned. As a result the following basic design policies were established:

- ① In view of urgent completion of the Project, the design should pay utmost attention to speedy and easy construction works. In view of creating job opportunity for Acehnese people, the construction works should be within capability of the local contractors.
- ② In view of sustainability, the design should regard to easy maintenance and repair after completion of construction works.
- ③ In view of financial aspect, the design should consider the available budget and maximum use of construction materials locally.

##### **2) Project Component**

The project component had been determined in due consideration of the request of the Indonesian counterpart agency, urgency, condition prevailing at the Site and damaged structures, foreseen rehabilitation works and its volume, required construction period, etc. On the basis of the GOF's request, screening, etc., the project component was finally determined as shown in Fig 2.2.3.

The Project is proposed to be realized in five (5) separate contact packages in order to expedite and complete the construction works in a period shortest as possible in view of urgency.

- Package I: Rehabilitation of Dykes and Revetments from Estuary to Peunayong Bridge (L=3,450m) and Dredging from Estuary to Lampulo (L=1,450m) on **Aceh River**
- Package II: Rehabilitation of Dykes and Revetments from Estuary to Lamnyong Bridge (L=3,950m) and Normalization from Estuary to Krueng Cut Bridge (L=2,400m) on **Floodway**
- Package III: Rehabilitation of Revetments and Normalization from Peunayong Bridge to Surabaya Bridge (L=2,050m) on **Aceh River**, and Normalization for **Daroy River** (L=1,516m)
- Package IV: Rehabilitation of Revetments and Normalization for **Doy River** (L=3,050m) and **Neng River** (L=1,512m)
- Package VII: Rehabilitation of Revetments around Lampulo on **Aceh River** (L=360m)
- \*Package V&VI were not used.

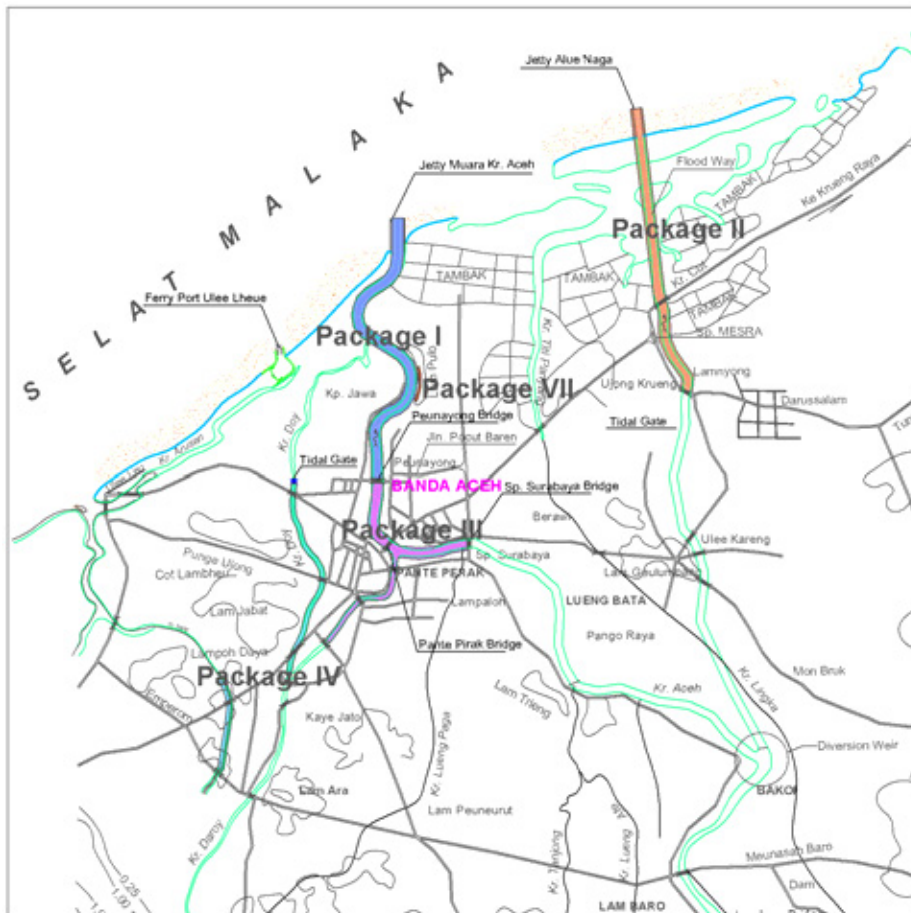


Figure 2.2.3 Summary of Project Component

3) Design Drawings

In total 228 design drawings are prepared.

#### 4) Cost Estimate

Construction cost of the proposed restoration works is estimated at Yen 435.5 Million at price level of July 2005. It should be noted that the cost does not include general expenditures such as cost for bid security and performance security, mobilization and demobilization of the contractor, etc.

#### (3) Preparation of Technical Report

Technical report was prepared. Composition of the report is same as that of the Project: RECOVERY OF WATER SUPPLY SYSTEM IN BANDA ACEH CITY. JICA Study Team has produced Volumes II: Technical Specifications and III: Drawings as Technical Report.

### 2.2.4 QIP for Rehabilitation of Lampulo Market

#### (1) Design Condition

The Lampulo Fish Market, which is located close to the mouth of the Aceh River (approximately 1 km), suffered major damage in the earthquake and tsunami. Most of the market facilities were destroyed and/or are in a dangerous situation. In view of these circumstances, the Lampulo Fish Market should be repaired and rebuilt, with the aim of restoring the functions of the fishing facility. The scope of works comprises (1) design works and cost estimate, and (2) preparation of technical report for restoration works on building for ice-making machines, freezers and generators, which will be procured separately by the Non-project Type Grant Aid Scheme.

#### (2) Detail Design

##### 1) Basic Consideration in Planning

Since the planned site for the facility is close to the sea and is constantly affected by the tides, the main structure will be reinforced concrete. For the roof, a steel frame that has been rustproofed will be used, and the roofing material will be galvanized sheet iron roofing.

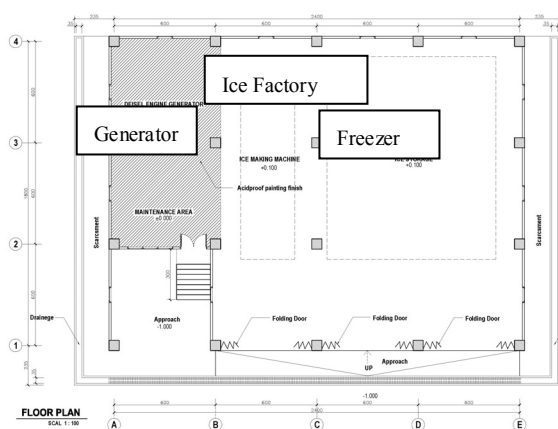


Figure 2.2.4 Ice Factory Floor Plan 28.7 m (W) x 20.35 m

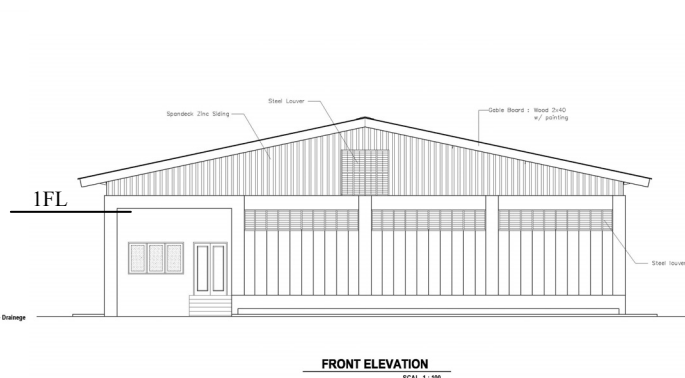


Figure 2.2.5 Ice Factory Elevation Plan

In floor planning specifications of new equipment to be procured (sizes, weights, quantities, etc.), space for selling of fish, reception and shipping, and storing are considered.

In section planning, appropriate spacing is also studied for equipment in terms of maintenance and inspections, as well as work efficiency. Height of story (4.7m) and floor elevation of the first story (approximately 1 m above ground level) are considered with the aim of keeping the facility sanitary and protecting equipment and materials from high tide and flood.

The details of the project were decided through discussions with Fish Market Operation and Management Corporation, which was directly involved in the facility planning, and the Ministry of Maritime Affairs and Fishery.

2) Design Drawings

Based on the results of the field survey, architectural plan drawings, finishing planning drawings, structural planning drawings, and electrical equipment drawings were drafted.

3) Cost Estimate

Construction cost is estimated at Yen 19.5 million.

(3) Preparation of Technical Report

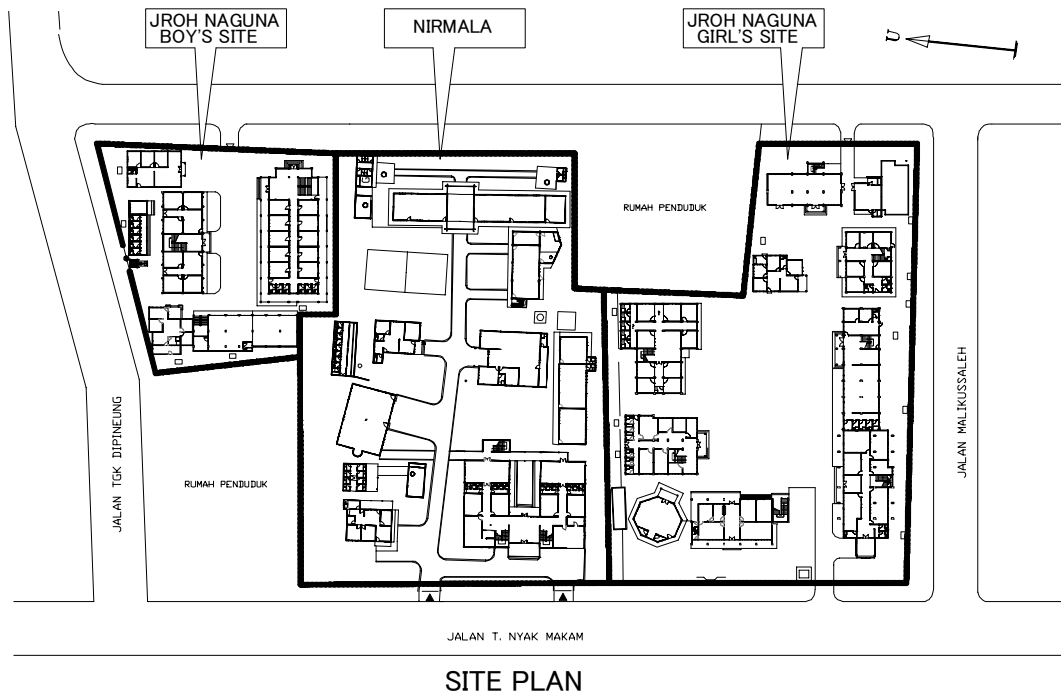
Technical report was prepared. Composition of the report is same as that of the Project: RECOVERY OF WATER SUPPLY SYSTEM IN BANDA ACEH CITY. JICA Study Team has produced Volumes II: Technical Specifications and III: Drawings as Technical Report.

### **2.2.5 QIP for Rehabilitation of Orphanages (Jroh Naguna & Nirmala)**

(1) Design Condition

Jroh Naguna and Nirmala orphanages, located approximately 3 km east of central Banda Aceh City were severely damaged as a result of earthquake and tsunami. As seen in Figure 2.2.6, the sites included not only boarding facilities, but also mosques, administration buildings, education rooms, kitchens and dining rooms, guest houses, and numerous other facilities related to the orphanages.

The scope of works comprises (1) design works and cost estimate, and (2) preparation of technical report for restoration of orphanage facilities. The goals of the project are to restore their normal function, improve the poor facility environment, employ disaster countermeasures, and expand the capacity of the facilities to meet the increased number of orphans and facility-related personnel.



SITE PLAN

Figure 2.2.6 Site Plan of Jroh Naguna and Nirmala Orphanages

(2) Detail Design

1) Classification for Restoration

Based on the field surveys, facility where damages are judged severe resulting that the structural safety cannot be guaranteed, such facility will be demolished and new construction is introduced. Unless otherwise, repair works is introduced. Main restoration items are repainting of walls, replacement and repainting of ceilings, replacement and painting of part of the roofing materials, replacement and repainting of fixtures, replacement of the flooring, replacement of toilets, and replacement of light fixtures. Figures 2.2.7, 2.2.8 and 2.2.9 show location of each facility and plan for restoration.

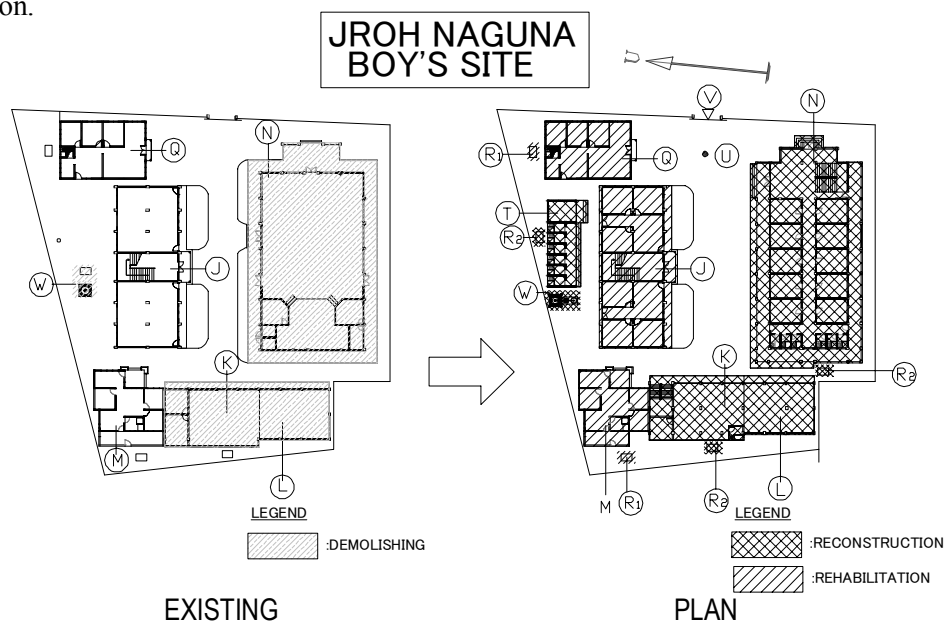


Figure 2.2.7 Site Plan and Rehabilitation Plan for Jroh Naguna Orphanage (Boy's Site)

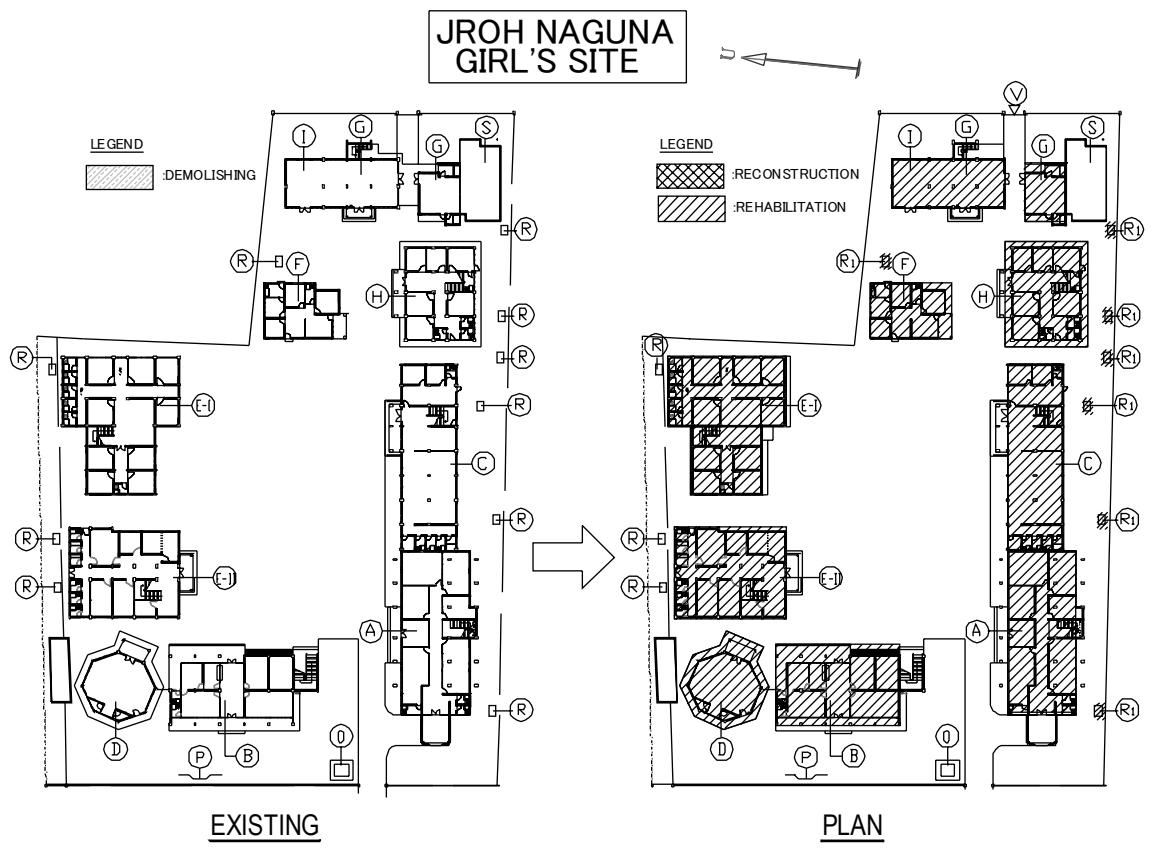


Figure 2.2.8 Site Plan and Rehabilitation Plan for Jroh Naguna Orphanage (Girl's Site)

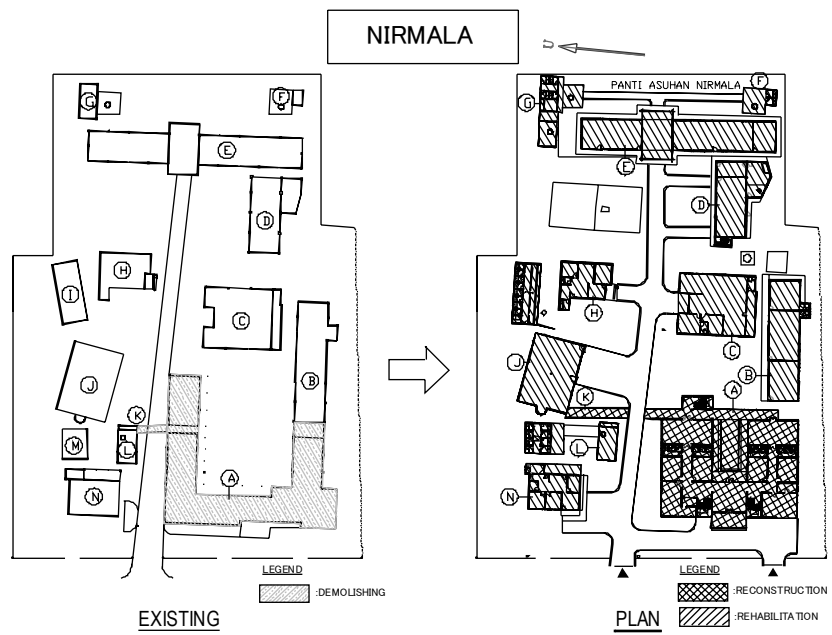


Figure 2.2.9 Site Plan and Rehabilitation Plan for Nirmala Orphanage

2) Design Overview of Each Facility

① Nirmala Orphanage Administration Building and Education Building

Table 2.2.1 and Figure 2.2.10 show outline of the plan and view of Nirmala orphanage administration building and education building.

Table 2.2.1 Outline of Plan of Nirmala Orphanage Administration Building and Education Building

|  | Existing facility                                     |  | New construction plan                     |  | Plan overview |
|--|---|--|---|--|---------------|
| Floor Space (m <sup>2</sup> )            | 438.0(m <sup>2</sup> )                                |  | 602.4(m <sup>2</sup> )                    |  |               |
| Cumulative Floor Space (m <sup>2</sup> ) | 438.0(m <sup>2</sup> )                                |  | 1459.0(m <sup>2</sup> )                   |  |               |
| Eave Height (m)                          | 3.80(m)   |  | 9.80(m)                                   |  |               |
| Floors                                   | One-story   |  | Three-story                               |  |               |
| Construction                             | Reinforced steel concrete frame<br>Block construction |  | Reinforced steel concrete<br>construction |  |               |
| Room Name                                | 1 <sup>st</sup><br>floor                              | <ul style="list-style-type: none"> <li>• Office</li> <li>• Storage</li> <li>• Classroom</li> <li>• Hostel</li> <li>• Other common space</li> </ul> | 1 <sup>st</sup><br>floor                  | <ul style="list-style-type: none"> <li>• Office</li> <li>• Storage</li> <li>• Classroom</li> <li>• Hostel</li> <li>• Other common space</li> </ul> |               |
|  | 2 <sup>nd</sup><br>floor                              | N/A  | 2 <sup>nd</sup><br>floor                  | <ul style="list-style-type: none"> <li>• Hostel</li> </ul>   |               |
|  | 3 <sup>rd</sup><br>floor                              |  | 3 <sup>rd</sup><br>floor                  | <ul style="list-style-type: none"> <li>• Multi-purpose room (meetings, evacuation area)</li> </ul>   |               |



**FRONT ELEVATION**



**LEFT ELEVATION**

Figure 2.2.10 View of Nirmala Orphanage Administration Building and Education Building

② Jroh Naguna Orphanage Vocational Training Building

Table 2.2.2 and Figure 2.2.11 show outline and view of the plan of Jroh Naguna orphanage vocational training building.

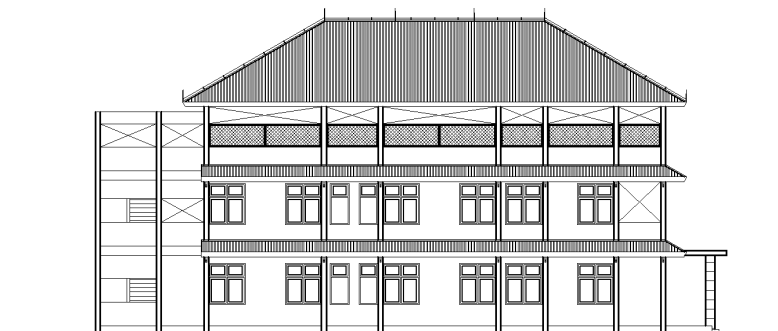
Table 2.2.2 Outline of Plan of Jroh Naguna Orphanage Vocational Training Building

|  | Existing facility                                     |  | New construction plan                     |  | Plan overview |
|--|---|--|---|--|---------------|
| Floor Space (m <sup>2</sup> )            | 169.0(m <sup>2</sup> )                                |  | 217.4(m <sup>2</sup> )                    |  |               |
| Cumulative Floor Space (m <sup>2</sup> ) | 169.0(m <sup>2</sup> )                                |  | 434.8(m <sup>2</sup> )                    |  |               |
| Eave Height (m)                          | 3.80(m)   |  | 7.70(m)                                   |  |               |
| Floors                                   | One-story   |  | Two-story                                 |  |               |
| Construction                             | Reinforced steel concrete frame<br>Block construction |  | Reinforced steel concrete<br>construction |  |               |
| Room Name                                | 1 <sup>st</sup> floor                                 | <ul style="list-style-type: none"> <li>• Training room</li> <li>• Storage</li> <li>• Other common space</li> </ul> | 1 <sup>st</sup> floor                     | <ul style="list-style-type: none"> <li>• Training room</li> <li>• Storage</li> <li>• Hostel</li> <li>• Other common space</li> </ul> |               |
|  | 2 <sup>nd</sup> floor                                 | N/A  | 2 <sup>nd</sup> floor                     | <ul style="list-style-type: none"> <li>• Hostel</li> </ul>   |               |

In principle, the design follows that of the existing facility. The new construction plan also calls for a rectangular layout, as with the existing facility. To accommodate additional orphans, a two-story hostel will be constructed.



**FRONT ELEVATION**



**LEFT ELEVATION**

Figure2.2.11 View of Jroh Naguna Orphanage Vocational Training Building



③ Jroh Naguna Orphanage Auditorium

Table 2.2.3 and Figure 2.2.12 show outline of the plan and view of Jroh Naguna orphanage auditorium.

Table 2.2.3 Outline of Plan of Jroh Naguna Orphanage Auditorium

|  | Existing facility                                     |   | New construction plan                     |  | Plan overview  |
|--|---|---|---|--|--|
| Floor space (m <sup>2</sup> )            | 388.0(m <sup>2</sup> )                                |   | 398.0(m <sup>2</sup> )                    |  |  |
| Cumulative Floor Space (m <sup>2</sup> ) | 388.0(m <sup>2</sup> )                                |   | 796.0(m <sup>2</sup> )                    |  | The layout is the same as the existing facility. To accommodate additional orphans, the first floor will have a hostel and the second floor will have an auditorium. |
| Eave Height (m)                          | 4.40(m)   |   | 8.50(m)                                   |  |  |
| Floors                                   | One-story   |   | Two-story                                 |  |  |
| Construction                             | Reinforced steel concrete frame<br>Block construction |   | Reinforced steel concrete<br>construction |  |  |
| Room Name                                | 1 <sup>st</sup> floor                                 | <ul style="list-style-type: none"> <li>• Auditorium</li> <li>• Storage</li> <li>• Other common space</li> </ul> | 1 <sup>st</sup> floor                     | <ul style="list-style-type: none"> <li>• Hostel</li> <li>• Other common space</li> </ul>     |  |
|  | 2 <sup>nd</sup> floor                                 | N/A   | 2 <sup>nd</sup> floor                     | <ul style="list-style-type: none"> <li>• Auditorium</li> <li>• Other common space</li> </ul> |  |



Figure 2.2.12 View of Jroh Naguna Orphanage Auditorium

3) Design Drawings

Based on the results of the field survey, and regulations and standards applied, design drawings were prepared.

6) Cost Estimate

Construction cost was estimated at Yen 106.4 million based on the bill of quantities and the unit prices for construction in the Aceh region.

(3) Preparation of Technical Report

Technical report was prepared. Composition of the report is same as that of the Project: RECOVERY OF WATER SUPPLY SYSTEM IN BANDA ACEH CITY. JICA Study Team has produced Volumes II: Technical Specifications and III: Drawings as Technical Report.

## 2.2.6 QIP for Support for Radio Station (Building)

### (1) Design Condition

The nationally-operated Radio Republic of Indonesia (RRI) is located in the center of Banda Aceh City. It was severely damaged by the earthquake and tsunami, and has been forced to shorten their broadcasting time as a result. The facilities included various structures related to broadcasting, such as a studio building, generator room, auditorium, transmitter, and antenna tower, of all which suffered damage from the earthquake. The scope of work comprises (1) design works and cost estimate, and (2) preparation of technical report for repair works for some facility buildings. Figure 2.2.13 shows RRI Site Plan.

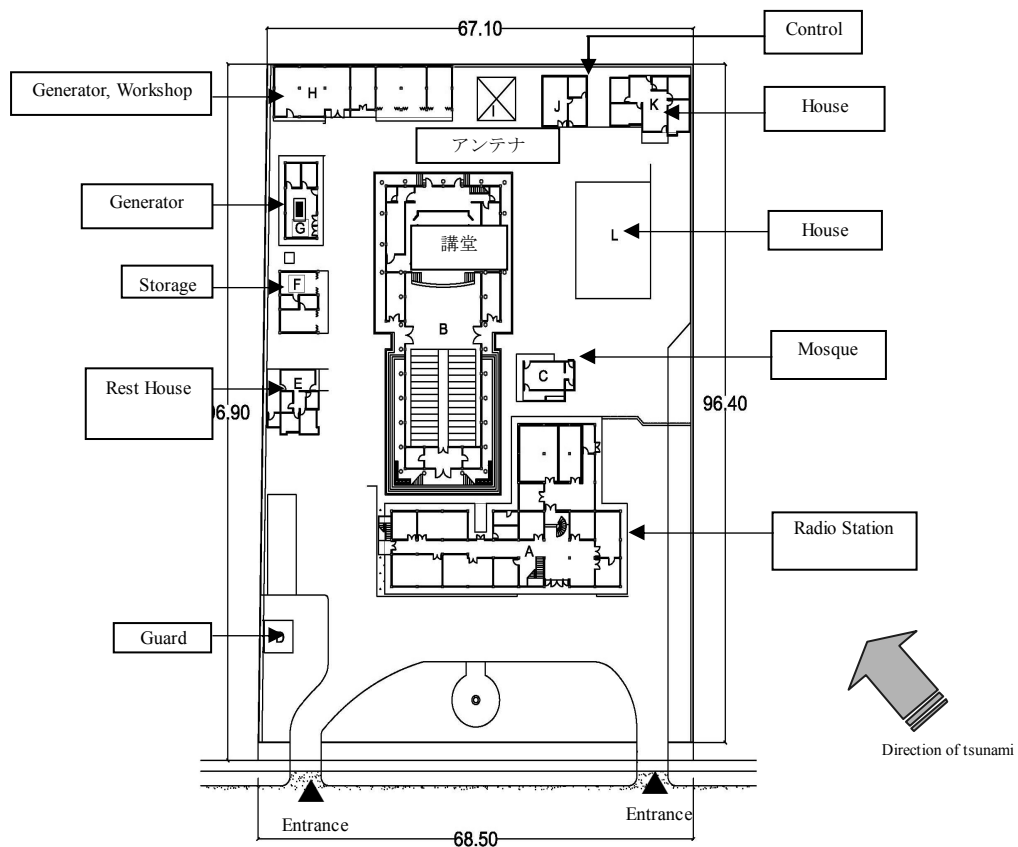


Figure 2.2.13 RRI Site Plan

### (2) Detail Design

#### 1) Design Drawings

Based on the results of the field survey, design drawings were prepared. As for the buildings that will be repaired, design plans that explain the overall design of existing buildings were prepared with respect to each facility (e.g. floor plans, elevations, cross-sections, fixture drawings, and equipment-related drawings), and all of the parts requiring repair are indicated.

2) Cost Estimate

The construction cost was estimated at Yen 106.4 million based on the bill of quantities and the unit prices for construction in the Aceh region.

(3) Preparation of Technical Report

Technical report was prepared. Composition of the report is same as that of the Project: RECOVERY OF WATER SUPPLY SYSTEM IN BANDA ACEH CITY. JICA Study Team has produced Volumes II: Technical Specifications and III: Drawings as Technical Report.

**2.2.7 QIP for Support for Radio and TV Stations (Broadcasting Equipment Component)**

(1) Design Condition

1) Scope of Design Work

Radio Republic Indonesia (RRI) and Television Republic Indonesia (TVRI), the state-owned broadcast in Indonesia, has suffered from the tremendous damage inflicted by the Indian Ocean earthquake off the west coast of Northern Sumatra, and is hence forced to shorten its air time. The scope of works comprises (1) design works and cost estimate, and (2) preparation of technical report for broadcasting equipment for the RRI and TVI necessary for restoration.

2) Configuration of Broadcasting Equipment

Table 2.2.4 below shows the radio broadcasting equipment of RRI to be procured in this Project.

Table 2.2.4 Configuration of Broadcasting Equipment of RRI

| No. | Description                        | Q'ty |     |
|-----|------------------------------------|------|-----|
| 1.  | Continuity Studio-1 System         | 1    | lot |
| 2.  | Continuity Studio-2 System         | 1    | lot |
| 3.  | Master Control System              | 1    | lot |
| 4.  | Editing Room System                | 1    | lot |
| 5.  | Radio OB(Out Broadcasting) VAN     | 1    | lot |
| 6.  | STL (Studio Transmission Link)     | 1    | lot |
| 7.  | SNG (Satellite News Gathering) Car | 1    | lot |
| 8.  | 5kW FM Transmitter                 | 1    | lot |
| 9.  | Measuring Equipment and Tools      | 1    | lot |
| 10. | Consumable Parts                   | 1    | lot |
| 11. | Installation Materials             | 1    | lot |

Figure 2.2.14 is a schematic diagram of configuration of the equipment to be procured in this Project.

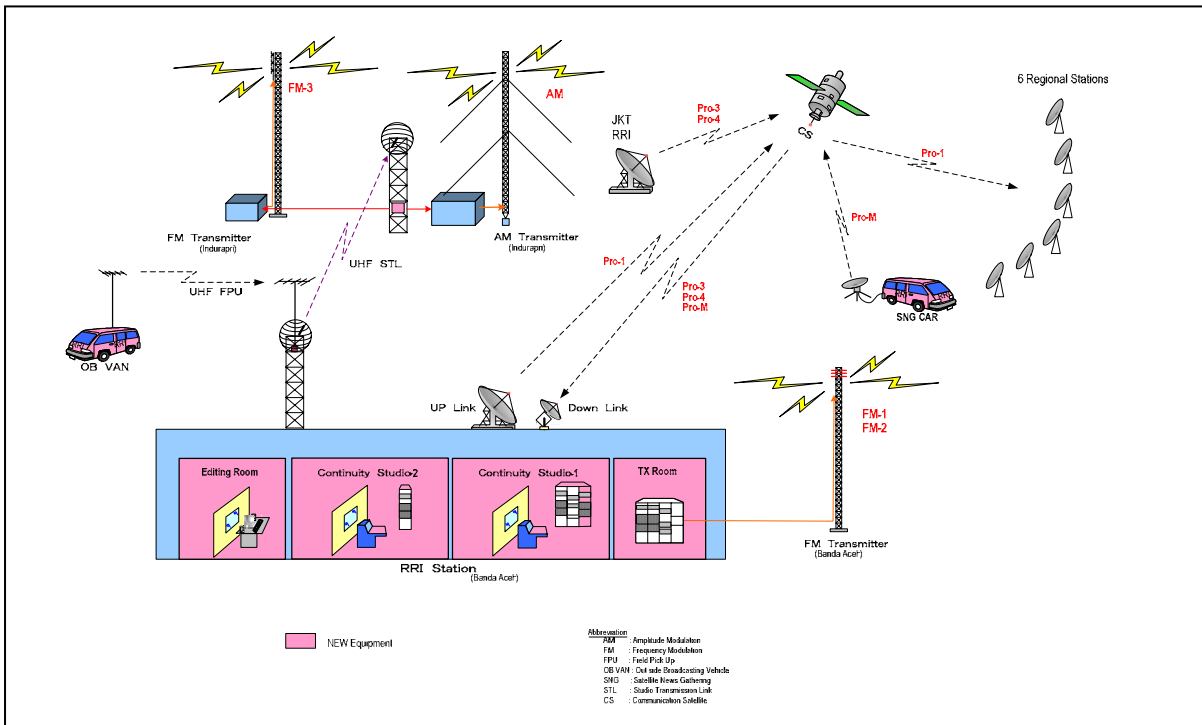


Figure 2.2.14 Plan of Project Component for RRI

Table 2.2.5 below shows the television broadcasting equipment of TVRI to be procured in this Project.

Table 2.2.5 Configuration of Broadcasting Equipment of TVRI

| NO. | Description                     | Q' ty |      |
|-----|---------------------------------|-------|------|
| 1.  | Field Recording ( ENG ) System  | 3     | lots |
| 2.  | 1:1 Editing System              | 1     | lot  |
| 3.  | Video Non-Linear Editing System | 1     | lot  |
| 4.  | Sending Digital VTR (REC/PB)    | 1     | set  |
| 5.  | OB VAN System                   | 1     | lot  |
| 6.  | SNG System                      | 1     | lot  |
| 7.  | Measuring Equipment             | 1     | lot  |
| 8.  | Consumable Parts                | 1     | lot  |

Figure 2.2.15 shows outline of configuration of the equipment to be procured in this Project.

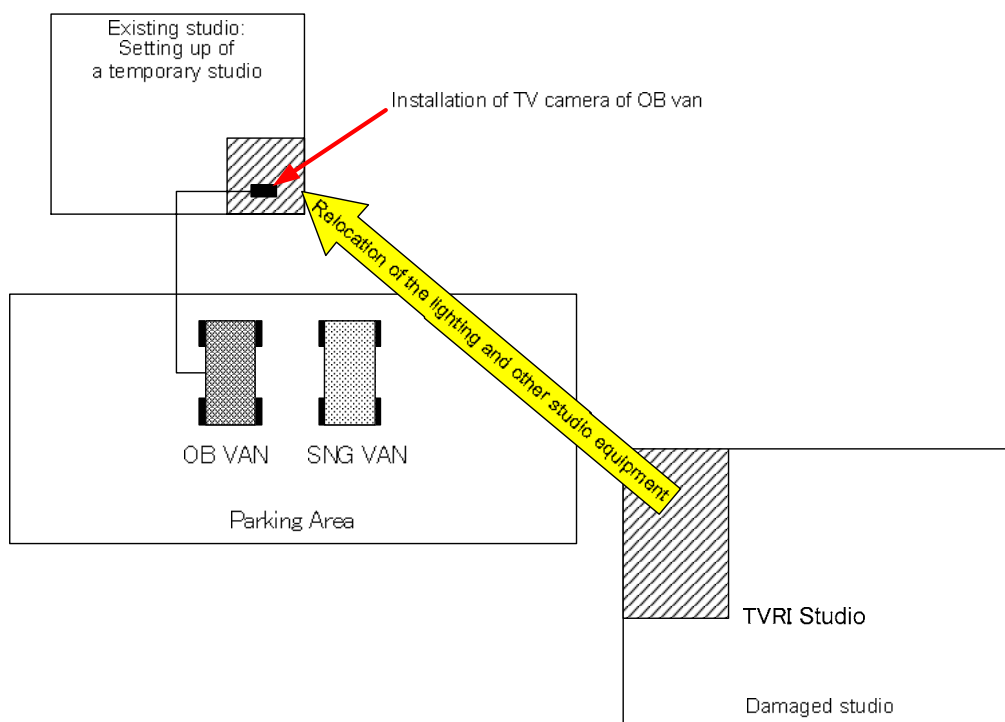


Figure 2.2.15 Plan of Project Component for TVI

## 2) Detail Design

With regard to the design of the Project, such international standards as IEC and ISO or Japanese standards will be used for the main equipment and materials.

The International System of Units (SI) shall be also used for the units of length, area, volume, mass (weight), etc., in the Specifications and Drawings for the Project, except where specified otherwise.

## 3) Design Drawings

As for design drawings of RRI, schematic diagram of signal flow, block diagram of radio OB Van, and other systems, new layout plan, etc. were prepared.

As for design drawings of TVI, composition of field recording system, outline of systems, block diagram of various systems, etc. were prepared.

## 4) Cost Estimate

Cost for RRI is estimated at Yen 357 million, while cost for TVRI is estimated at Yen 453 million.

## (3) Preparation of Technical Report

Technical report was prepared. Composition of the report is same as that of the Project: RECOVERY OF WATER SUPPLY SYSTEM IN BANDA ACEH CITY. JICA Study Team has produced Volumes II: Technical Specifications and III: Drawings as Technical Report.

## **2.3 MONITORING WORKS**

### **2.3.1 Monitoring on Output and Project Purpose for Septage Treatment Plant**

On completion of rehabilitation works, achievement on Outputs and Project Purpose were also monitored by the Study Team. Following Outputs and Project Purpose were originally identified, as shown in Table 2.3.1.

Project Purpose: Contribute to improve sanitary condition of Banda Aceh City and mitigate negative environmental impact caused by septage disposal.

Output 1); STP is rehabilitated with the original treatment capacity of 50m<sup>3</sup>/day.

Output 2); Septage from the city is properly treated and disposed.

Rehabilitation works were successfully completed with the originally planned schedule and specification. In addition, Sanitary and Park Department (DKP: *Dinas Kebersihan dan Pertamanan*) of the city prepared annual operation plan for the rehabilitated STP. Annual budget, together with personnel employment plan, was submitted and approved by the Municipal government. Based on the facilities, together with institutional arrangements made by DKP, 50m<sup>3</sup>/day of septage from the city is ensured to be properly treated and disposed. Hence, these Outputs and Project Purpose have been fully achieved by the project.

However, total volume of septage from Banda Aceh City is estimated as 100m<sup>3</sup>/day. DKP has obtained nine (9) vacuum cars, which is enough for collecting all septage from the city. Under this situation, rehabilitated STP is posed on a risk to be overused and resulted in deterioration of quality of effluent from the facility.

To solve the problem, a request for technical and financial assistance on new STP construction project was made by DKP. On response, the new project has been commenced with a financial assistance from UNICEF. Technical studies and design works have been carried out by a German consulting company. Construction works for the new plant, with a treatment capacity of 50m<sup>3</sup>/day, will be started from March 2006 and completed in September 2006. After the completion of this new plant, all septage from the city will be properly treated and disposed.

### **2.3.2 Monitoring on Output and Project Purpose for Other (5) QIPs**

Expected Outputs from QIPs were identified on three different levels. The first level was output from technical assistance by JICA Study Team, including preparation of detail design and technical report for each rehabilitation work. The second was finalization of tender documents, and the third is actual implementation of rehabilitation works by JICS.

The technical report on each QIP was prepared in September 2005 and finalized by respective implementing agencies. Subsequently, tendering was held, and rehabilitation works have been commenced from late January to early February 2006 as described on the previous chapters. Hence, it is concluded that Outputs on the first and second level have been fully achieved. On the other hand, achievement of Output on the third level, i.e) “Rehabilitation works are properly carried out”, has been confirmed only on the initial stage. Achievements in the future will be monitored and confirmed by JICS.

There is also another important issue to be noted during implementation stage of these QIPs. Capacity of implementation agencies on operation and maintenance (O&M) should be strengthened. This issue is identified as an “External Factor” on each Project Summary Sheet since QIPs were designed for quickly responding to the urgent need on rehabilitation of public infrastructure and facilities. In many public agencies in Banda Aceh City, however, large number of technical and administrative staffs lost their lives by the disaster in December 2004. Therefore capacity building of these public agencies is also required for achieving the Project Purpose of each QIP which will enhance sustainability of the projects.

Overall progress of Quick Impact Projects (QIPs) is shown in Table 2.3.1.

Table 2.3.1 Overall Progress of Quick Impact Projects (QIPs)

(As of February 2006)

| Project Name  | Name of Company                  |  | Invitation for Bid | Distribution of Bid Document | Date of Bid (Open Envelope A) | Date of Bid (Open Envelope B) | Date of Signing Contract | Notice to Proceed | Kick-off Meeting | Coordination Meeting in Aceh | Completion Date                            | 2005  |   |   |   |    |    |    |   |   |   |   |   | 2006 |   |   |   |    |    |    |  |  |  |  |  |
|---|----------------------------------|--|--------------------|------------------------------|-------------------------------|-------------------------------|--------------------------|-------------------|------------------|------------------------------|--|---|---|---|---|----|----|----|---|---|---|---|---|------|---|---|---|----|----|----|--|--|--|--|--|
|   |                                  |  |                    |                              |                               |                               |                          |                   |                  |                              |  | 6   | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6    | 7 | 8 | 9 | 10 | 11 | 12 |  |  |  |  |  |
| 1. Rehabilitation of Septage Treatment Plant              | Consultant                       | JICA URRP Study Team                             |                    |                              |                               |                               |                          |                   |                  |                              |  | [White bar from June to August 2005]            |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Contractor                       | PT. Tenaga Inti Makumu Beusare                   | 1-Jun-2005         | 6/2                          | 16-Jun-2005                   | -                             | 28-Jun-2005              | 5-Jul-2005        | 5-Jul-2005       | 5-Jul-2005                   | 28-Dec-2005                                | [Black bar from July to August 2005]            |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
| 2. Recovery of Water Supply System in Banda Aceh City     | Consultant                       | PT. Arkonin Engineering Manggala Pratama         |                    |                              |                               |                               |                          |                   |                  |                              |  | [White bar from January to February 2006]       |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Contractor                       | Glynwed Pipe System (Asia) Pte.Ltd               | 24-Oct-2005        | 10/25-10/27                  | 21-Nov-2005                   | 9-Dec-2005                    | 23-Dec-2005              | 6-Jan-2006        | -                | 18-Jan-2006                  | 18-Dec-2006                                | [Black bar from January to February 2006]       |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
| 3. Emergency Repair Works of Aceh River and Floodway      | Consultant                       | PT. Tri Tunggal Pratyakasa                       |                    |                              |                               |                               |                          |                   |                  |                              |  | [White bar from October to November 2005]       |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Contractor                       |  |                    |                              |                               |                               |                          |                   |                  |                              |  | [White bar from October to November 2005]       |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | (Package 1)                      | PT. Adhi Karya (Persero)                         | 20-Sep-2005        | 9/20-9/22                    | 24-Oct-2005                   | 15-Nov-2005                   | 12-Dec-2005              | 14-Dec-2005       | 29-Nov-2005      | -                            | 9-Dec-2006                                 | [Black bar from December 2005 to December 2006] |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | (Package 2)                      | PT. Waskita Karya (Persero)                      | 20-Sep-2005        | 9/20-9/22                    | 24-Oct-2005                   | 15-Nov-2005                   | 8-Dec-2005               | 14-Dec-2005       | 29-Nov-2005      | -                            | 9-Nov-2006                                 | [Black bar from December 2005 to November 2006] |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | (Package 3)                      | PT. Istaka Karya (Persero)                       | 20-Sep-2005        | 9/20-9/22                    | 24-Oct-2005                   | 15-Nov-2005                   | 8-Dec-2005               | 14-Dec-2005       | 29-Nov-2005      | -                            | 12-Jun-2006                                | [Black bar from December 2005 to June 2006]     |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | (Package 4)                      | PT. Istaka Karya (Persero)                       | 20-Sep-2005        | 9/20-9/22                    | 24-Oct-2005                   | 15-Nov-2005                   | 8-Dec-2005               | 14-Dec-2005       | 29-Nov-2005      | -                            | 11-Aug-2006                                | [Black bar from December 2005 to August 2006]   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
| (Package 7)   | PT Bina Pratama Persada          | 29-Aug-2005                                      | 8/29-31            | 20-Sep-2005                  | 28-Sep-2005                   | 1-Nov-2005                    | 2-Nov-2005               | 29-Nov-2005       | -                | 1-May-2006                   | [Black bar from November 2005 to May 2006] |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
| 4. Rehabilitation of Lampulo Fisk Market *1               | Consultant                       | No plan to employ consultant for this component. |                    |                              |                               |                               |                          |                   |                  |                              |  |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Contractor                       | Tender documents are under finalization.         |                    |                              |                               |                               |                          |                   |                  |                              |  |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
| 5. Rehabilitation of Orphanages (Jroh Naguna and Nirmala) | Consultant                       | PT. Bina Karya                                   |                    |                              |                               |                               |                          |                   |                  |                              |  | [White bar from January to February 2006]       |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Contractor (Package 1) *2        | PT. Istaka Karya (Persero)                       | 9-Nov-2005         | 11/14-15                     | 6-Dec-2005                    | 16-Dec-2005                   | 26-Dec-2005              | 1-Feb-2006        | 11-Jan-2006      | 26-Jan-2006                  | 17-Sep-2006                                | [Black bar from January to September 2006]      |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
| 6. Supporting for Radio and TV Stations                   | Consultant                       | No plan to employ consultant for this component. |                    |                              |                               |                               |                          |                   |                  |                              |  |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Contractor                       |  |                    |                              |                               |                               |                          |                   |                  |                              |  |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | RRI (Rehabilitation of building) | PT.Piyeung Jaya Perkasa                          | 9-Nov-2005         | 11/14-15                     | 6-Dec-2005                    | 16-Dec-2005                   | 26-Dec-2005              | 20-Jan-2006       | 10-Jan-2006      | 28-Jan-2006                  | 20-May-2006                                | [Black bar from January to May 2006]            |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | Supplier                         |  |                    |                              |                               |                               |                          |                   |                  |                              |  |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | RRI (Emergency Equipment)        | Sumitomo Corporation                             | 20-Jun-2005        | 6/21-6/23                    | 15-Jul-2005                   | -                             | 18-Aug-2005              | -                 | -                | -                            | 4-Jan-2006                                 | ▲   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |
|   | RRI (Rehabilitation Equipment)   | Sumitomo Corporation                             | 30-Aug-2005        | 8/31-9/2                     | 22-Sep-2005                   | -                             | 31-Oct-2005              | -                 | -                | -                            | 12-Aug-2006                                |   |   |   |   |    |    |    |   |   |   |   |   | ▲    |   |   |   |    |    |    |  |  |  |  |  |
| TVRI (Emergency & Rehabilitation Equipment)               |                                  | 12-Sep-2005                                      | 9/13-9/15          | 7-Oct-2005                   | -                             | (Under Evaluation)            | -                        | -                 | -                | (Not fixed)                  |  |   |   |   |   |    |    |    |   |   |   |   |   |      |   |   |   |    |    |    |  |  |  |  |  |

Note: \*1: JICA Study Team supported design work on building for ice-making facility. This building work has consequently been included in the contract package for equipment supply.

\*2: Package 1 includes another one (1) orphanage other than Jroh Naguna and Nirmala. There is also Package 2 including rehabilitation of three (3) orphanages.

□ Activity by Consultant

■ Activity by Contractor

▲ Time of Delivery



## **CHAPTER 3 GIS FOR ARRIS (ACEH REHABILITATION AND RECONSTRUCTION INFORMATION SYSTEM)**

### **3.1 BASIC PROCEDURE FOR ESTABLISHMENT OF ARRIS**

#### **3.1.1 Objectives of ARRIS**

The objectives of ARRIS are to build a geographic information system and to prepare relevant topographic maps and data. These maps and data would be able to be used efficiently for rehabilitation and reconstruction planning of Banda Aceh City.

The following two points were the final goals of the activities related to geographic matters in the Study:

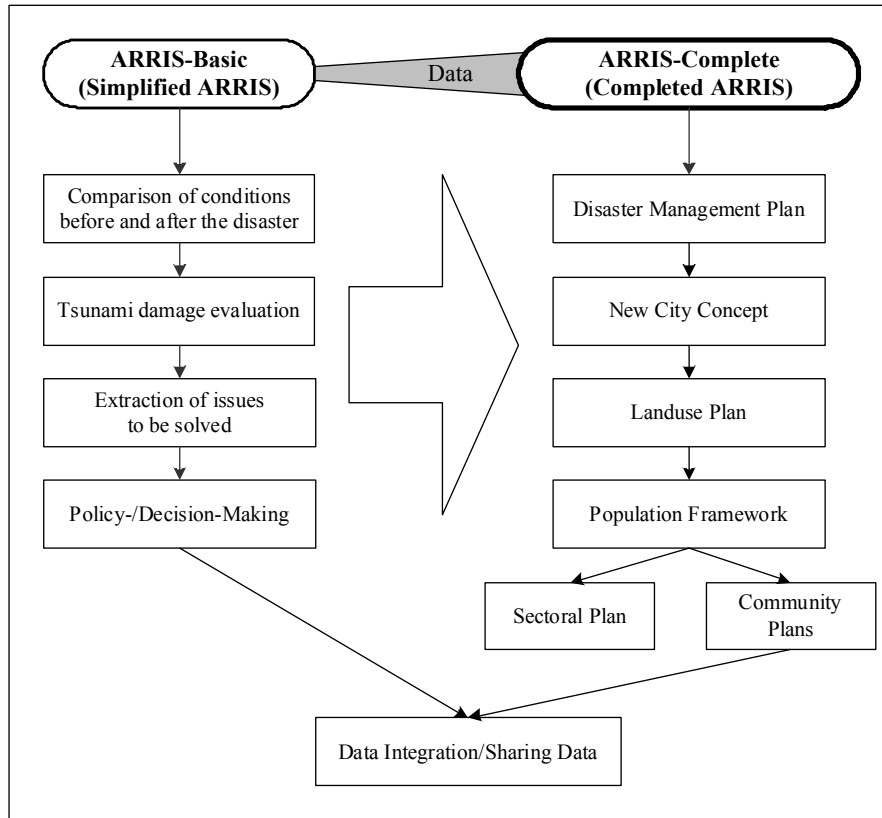
- To prepare digital topographic maps for Banda Aceh City  
Digital topographic maps and related data would be prepared and used as base maps with a geographical information system (GIS). The basic GIS data would be prepared at a nominal scale of 1:2,000.
- To develop an Aceh Rehabilitation and Reconstruction Information System  
A GIS named “Aceh Rehabilitation and Reconstruction Information System (ARRIS)” would be established and utilized for various purposes in the rehabilitation and reconstruction planning of Banda Aceh City. In addition, ARRIS would be shared by various groups who were concerned with the activities of rehabilitation and reconstruction of Banda Aceh City.

The target area of the digital mapping and ARRIS is Banda Aceh City (about 68km<sup>2</sup>) and its neighboring towns and villages, which are located in the northern end of Sumatra in Indonesia.

### 3.1.2 Basic Procedure

#### (1) Procedure and Concept

Since urgency was required for the JICA Study, formulation of the ARRIS had been implemented by two steps (Figure 3.1.1).



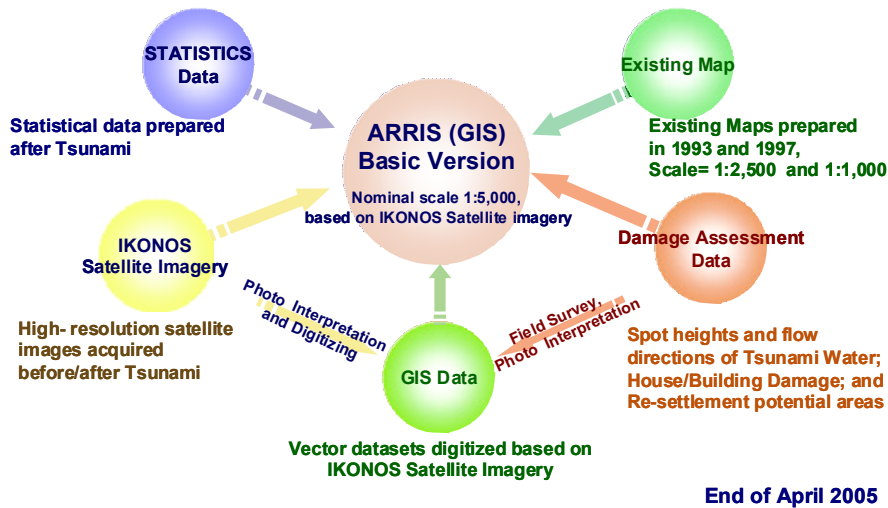
Source: JICA Study Team

Figure 3.1.1

Development Plan and Utilization of ARRIS

- Basic Version of ARRIS

The basic version of ARRIS had been developed (based on the IKONOS satellite images), as a first step, to understand the physical conditions in Banda Aceh City by comparing before and after conditions. The related work for development of the simplified ARRIS had been finished by the end of April, 2005. Figure 3.1.2 shows a concept of the basic version of ARRIS.

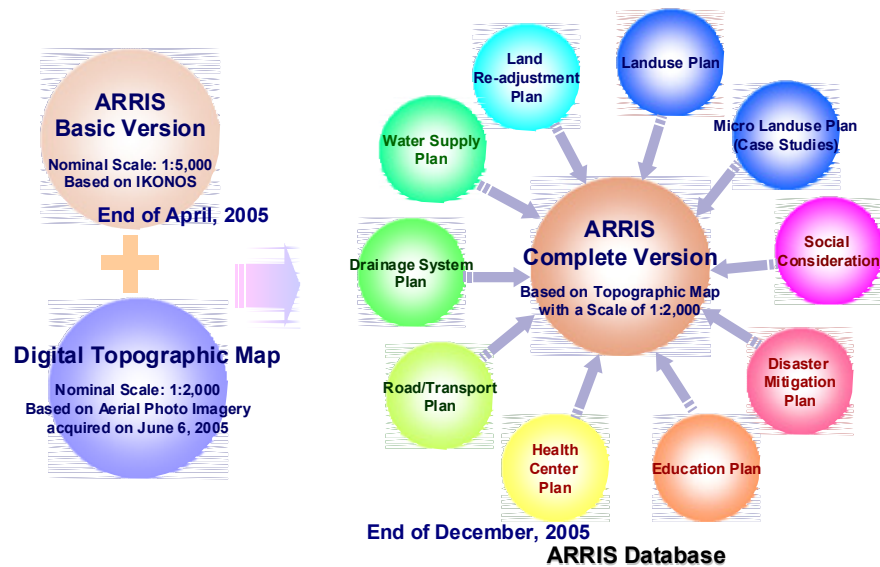


Source: JICA Study Team

Figure 3.1.2 Concept of Formulation of Basic Version of ARRIS

- Complete Version of ARRIS

Since the basic version of ARRIS had been completed, the complete version of ARRIS was developed. The complete version of ARRIS was planned to be developed for supporting the rehabilitation/reconstruction plans to be prepared by the JICA Study Team, and contains relevant GIS data and thematic maps. Finally, the ARRIS also contains the GIS data of the digital topographic maps of Banda Aceh City with a nominal scale of 1:2,000, which are explained in detail in Chapter 5 below. Figure 3.1.3 shows a concept of the complete version of ARRIS.



Source: JICA Study Team

Figure 3.1.3 Concept of Formulation of Complete Version of ARRIS

The formation of ARRIS was finished at the end of December, 2005.

### (3) Software and Data Format

#### 1) GIS Software

ArcGIS (Arcview 8 and 9) for Windows was used as a standard of GIS software in developing ARRIS and the geographic data.

#### 2) Vector Data Format

ESRI Shapefile was used as a standard file format for GIS data of the ARRIS. The Shapefile is convertible to other vector data format such as AutoCAD dxf, using the relevant software.

#### 3) Raster Data Format

GeoTIFF is used as a standard raster data format for GIS data in ARRIS, and is utilizable with ArcGIS.

#### 4) Projection and Datum

All the geographic data for ARRIS were projected for UTM Zone 46 N (WGS 1984).

### 3.2 COMPLETE VERSION OF ARRIS

#### 3.2.1 Contents of ARRIS

The formation of ARRIS had been completed in December 2005. Finally, ARRIS contains the various kinds of maps and data. A set of the data for ARRIS (excluding the IKONOS satellite images) can be written into a 700MB CD-R (ARRIS Data CD). The contents of an ARRIS Data CD are mentioned below.

##### (1) Category of Information

The map information in ARRIS is mainly divided into the following two categories.

- Digital topographic maps of Banda Aceh City with a nominal scale of 1:2,000
- Thematic maps showing rehabilitation and reconstruction plans for Banda Aceh City (prepared by the JICA Study Team)

##### (2) File Format and Required Software for ARRIS

The following data format were used or applied to comprise of the thematic maps in ARRIS (Table 3.2.1). Users of ARRIS are required to use the relevant software to manipulate the files of the maps included in ARRIS.

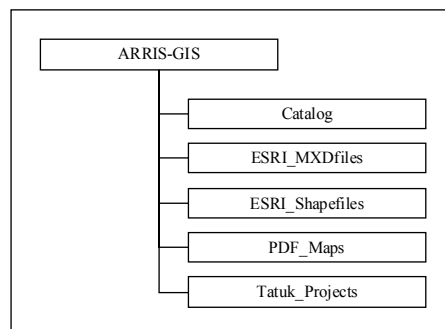
Table 3.2.1 File Formats for Information and Data in ARRIS

| Format  | Relevant/Required Software     | Target Information/Data  |
|---------|--------------------------------|--|
| MXD     | ArcGIS (8.3 and later)         | Thematic maps for planning   |
| PDF     | Acrobat and Acrobat Reader     | Digital topographic maps of Banda Aceh City with a nominal scale of 1:2,000, thematic maps for planning with various scales (fixed for A3 paper) |
| Ttkgp   | TatukGIS                       | Thematic maps for planning, a sample view of the digital topographic map of Banda Aceh City  |
| SHP     | ArcGIS, ArcView                | Digital topographic maps of Banda Aceh City, thematic maps for planning  |
| GeoTIFF | ArcGIS, ArcView, ENVI, Imagine | IKONOS satellite images  |

Source: JICA Study Team

##### (3) Arrangement of Maps and Data

The maps and data for ARRIS have been arranged in structural data folders as shown in Figure 3.2.1.

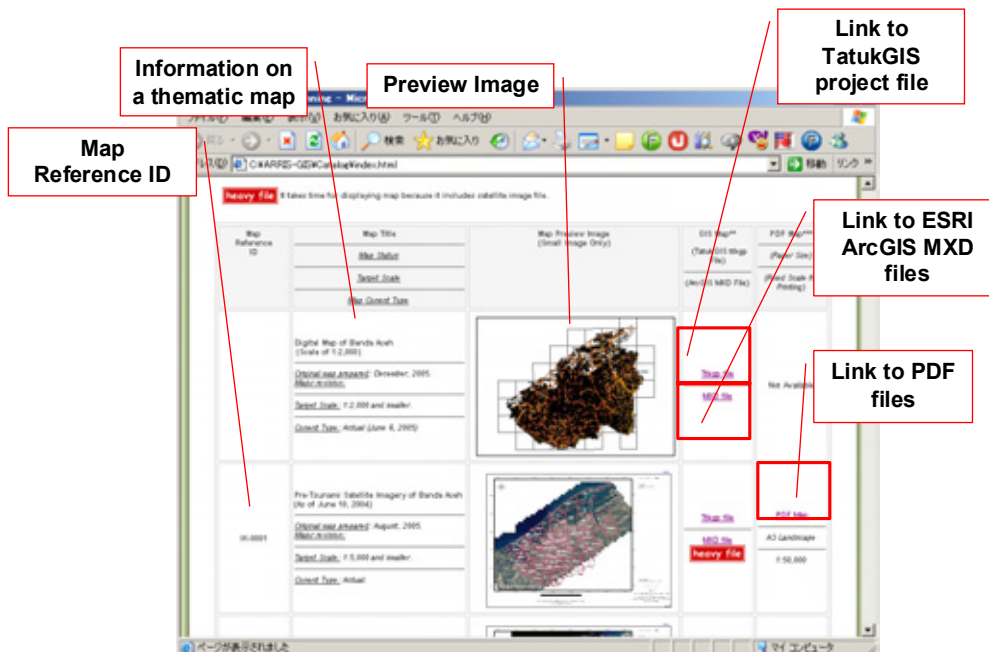
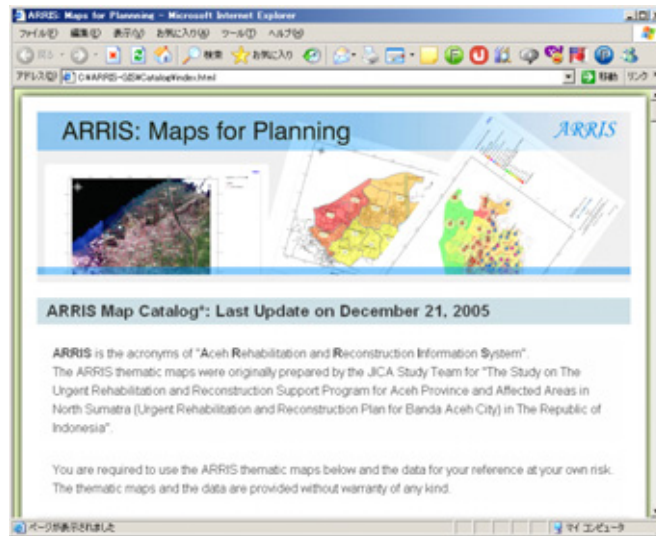


Source: JICA Study Team

Figure 3.2.1 Data Arrangement Scheme for ARRIS

“Catalog” folder includes a hyper text mark-up language file (html) that are named “index.html” for the catalog of the maps included in ARRIS. Other files in “Catalog” are used as materials for “index.html”. Figure 3.2.2 shows a sample image of “index.html” in “Catalog”.Users can access to the digital maps and the thematic maps by opening “index.html” with browser software (Internet Explorer version 6.0 or later versions are recommended). Users can also access the files of the digital maps or the thematic maps with relevant software.

The files included in the five (5) data folders above are arranged in subfolders based on the contents or theme of each file.



Source: JICA Study Team

Figure 3.2.2 Sample View Images of ARRIS Map Catalog

### 3.2.2 Maps for Planning

A set of 49 thematic maps, showing actual condition or plans for Banda Aceh City, were prepared in The Study, and incorporated in ARRIS. The prepared thematic maps were divided into ten (10) categories as shown in Table 3.2.2

Table 3.2.2 Category and Number of Thematic Maps

| Category of Thematic Map          | Number of Maps |           |
|-----------------------------------|----------------|-----------|
|                                   | Condition      |           |
|                                   | Actual         | Plan      |
| IKONOS Satellite Images           | 2              | 0         |
| Damage Assessment                 | 10             | 0         |
| Hazard and Risks                  | 6              | 0         |
| Disaster Management Plan          | 0              | 1         |
| City Concept/Spatial Plan         | 2              | 3         |
| Transportation Plan               | 5              | 1         |
| Water Supply Plan                 | 1              | 1         |
| Education (School) Plan           | 3              | 2         |
| Health Center Plans               | 0              | 1         |
| Case Studies (Micro Landuse Plan) | 0              | 11        |
| <b>Total</b>                      | <b>29</b>      | <b>20</b> |

Source: JICA Study Team

### 3.2.3 Recommendation on Operation and Maintenance

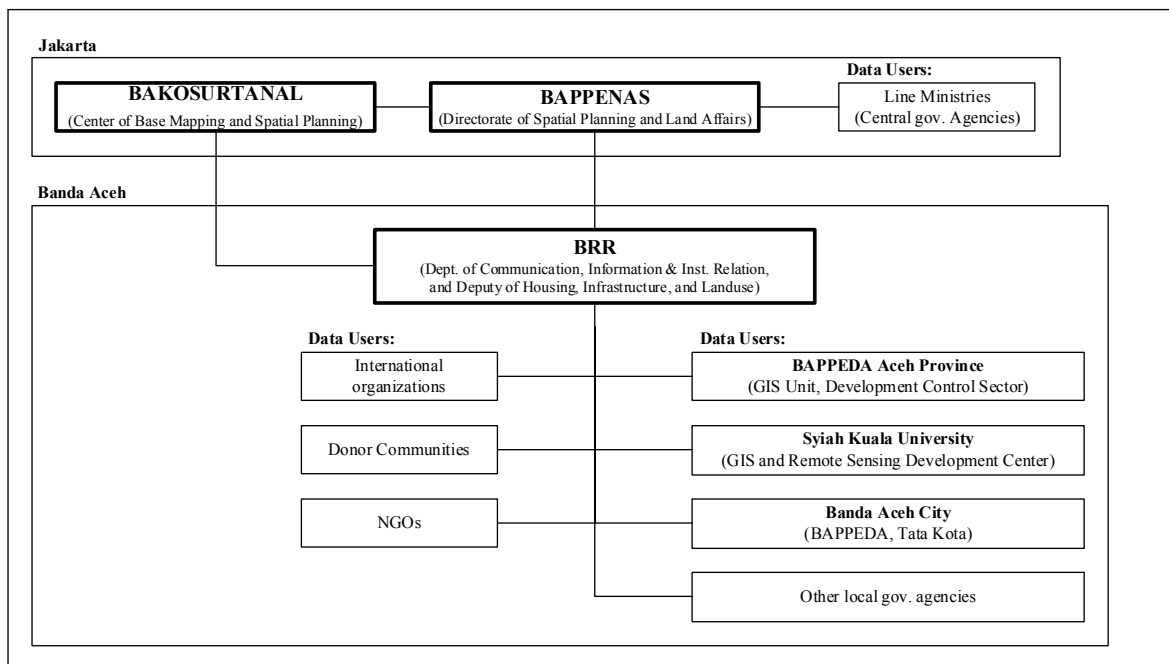
#### (1) Organizational Framework

The following three (3) governmental institutions are considered to be the most important organizations in formulating the schemes of operation and maintenance of ARRIS (Figure 3.2.3).

- BAKOSURTANAL (Center of base mapping and spatial planning)
- BAPPENAS (Directorate of spatial planning and land affairs, Deputy of regional autonomy and regional development)
- BRR (Deputy of Housing, infrastructure and land use)

- 1) BAKOSURTANAL shall be the most important institution as the coordination of the national spatial data infrastructure (NSDI) including ARRIS data (the topographic maps of Banda Aceh City with a nominal scale of 1:2,000 and the thematic GIS layers), the (data) production house, the technical supporter for the central and local governmental institutions, and an ARRIS hub in Jakarta.
- 2) BAPPENAS shall be another important ARRIS hub in Jakarta, especially for the central government institutions (the line ministries).
- 3) BRR shall be the ARRIS hub in Aceh, and the main governmental organization for formulating and executing the operation and maintenance of ARRIS.

The three (3) organizations above shall be required to cooperate with each other closely.



Source: JICA Study Team

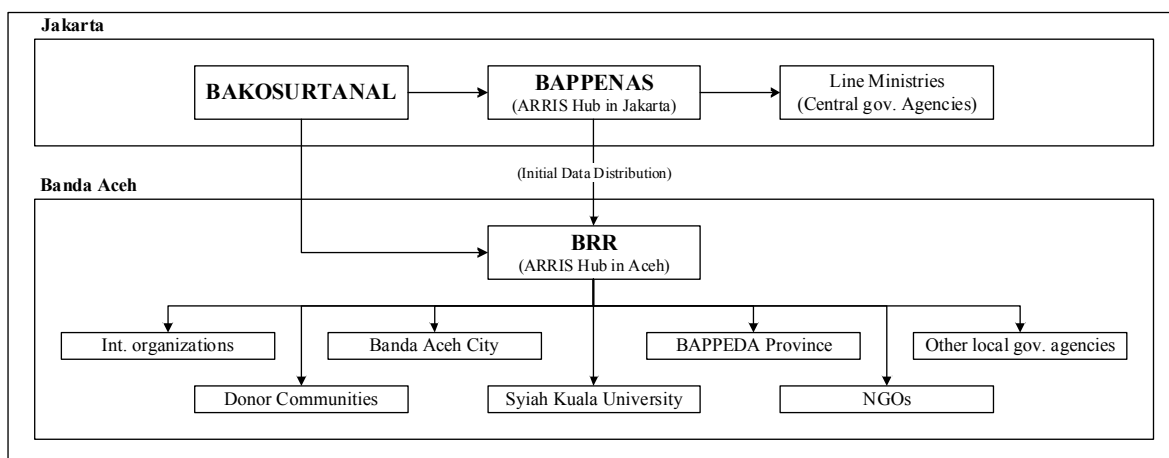
Figure 3.2.3 Organizational Framework for Operation and Maintenance of ARRIS (Recommendation)

It is proposed that the plan of the operation and maintenance of ARRIS is divided into the following four aspects: 1) Data Dissemination; 2) Operation; 3) Maintenance; and 4) Technical Support; as mentioned below.

## (2) Operation and Maintenance

### 1) Data Dissemination

Figure 3.2.4 shows a plan of data dissemination originally planned by BAPPEANS in January 2006.



Source: BAPPENAS, revised by JICA Study Team

Figure 3.2.4 Data Dissemination Flow (Originally Planned by BAPPENAS)



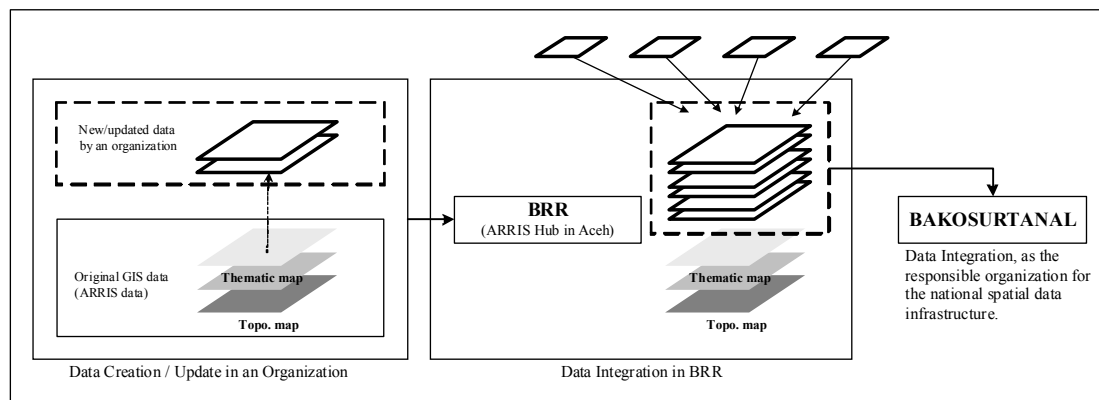
- The original data (all data for ARRIS) that were prepared by the JICA Study Team shall be kept and managed by BAKOSURTANAL.
- BAPPENAS shall be a data distribution center as an ARRIS hub in Jakarta for the central governmental institutions (the line ministries).
- BRR shall be the data distribution center as the ARRIS hub in Banda Aceh for the local governmental institutions, international organizations, donor communities, NGOs, and universities.
- ARRIS hubs shall distribute one (1) CD, which includes the ARRIS data, to each organization, based on the request from the organization (one CD for one organization).

## 2) Operation

- Digital Topographic Maps of Banda Aceh City
 

The data for the digital topographic maps of Banda Aceh City with a nominal scale of 1:2,000 shall be updated and maintained by BAKOSURTANAL, periodically.
- Thematic GIS data
 

The thematic GIS data, which are used in the thematic maps for the rehabilitation and reconstruction plans for Banda Aceh City prepared by the JICA Study Team, shall be basically utilized and maintained by each data user (organization) because the data will be modified, revised, or updated by each organization based on its need (Figure 3.2.5).



Source: BAPPENAS, revised by JICA Study Team

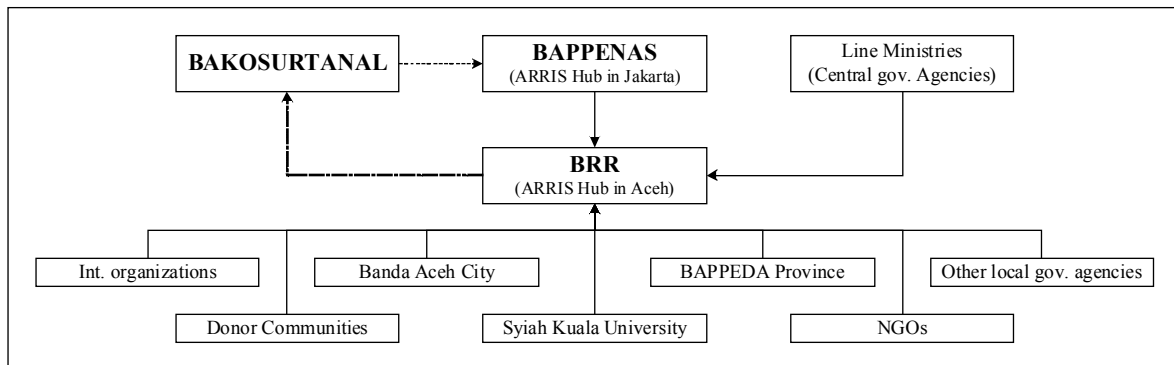
Figure 3.2.5 Concept on Data Update/Maintenance (Recommendation)

## 3) Maintenance

- The thematic GIS data shall be maintained in each data user (organization) basically.
- BRR shall collect and compile the new/modified thematic GIS data from each data user periodically (e.g., annually), in case of need. Periodically collected data shall be directly sent to BAKOSURTANAL, and to BAPPENAS through BAKOSURTANAL (Figure 3.3.7).
- Collected/compiled data to be shared shall be periodically re-distributed to the data users

through ARRIS hubs, in accordance with the plan of the data dissemination flow shown in Figure 3.2.6.

- BAKOSURTANAL is expected to be a technical advisor for BRR.



Source: JICA Study Team

Figure 3.2.6 Data Integration Flow (Recommendation)

### 3.3 CONTENTS OF THE TOPOGRAPHIC SURVEY

Table 3.3.1 below shows the contents of the work that was originally planned concerned with digital mapping, generation of relevant data, and use of ARRIS throughout the Study.

Table 3.3.1 Contents of Work for Topographic Survey

| Output   | Work Item   | Detailed Item   |
|--|---|---|
| Ortho-rectified IKONOS images                              | A. Generation of natural color ortho-rectified IKONOS satellite images. | A-1) Procurement of IKONOS raw data                       |
|  |   | A-2) Ortho-rectification                                  |
| Digital maps and GIS layer with a nominal scale of 1:2,000 | B. Field surveys for digital mapping.                                   | B-1) Bench marking and pricking for 29 points             |
|  |   | B-2) GPS survey: 29 points in total                       |
|  |   | B-3) Leveling: 210 km in total                            |
|  |   | B-4) Spot height leveling: 68 km <sup>2</sup> in total    |
|  |   | B-5) Field verification: 68 km <sup>2</sup> in total      |
|  |   | B-6) Supplementary survey: 68 km <sup>2</sup> in total    |
| DTM  | C. Provisional digital mapping.   | C-1) Digitizing existing maps                             |
|  |   | C-2) Data editing: 68 km <sup>2</sup> in total            |
|  | D. Finalization of digital maps.  | D-1) Digital stereo plotting: 68 km <sup>2</sup> in total |
|  |   | D-2) Digital editing: 68 km <sup>2</sup> in total         |
|  |   | D-3) Data editing (DXF format data)                       |
|  | E. Formation of GIS layers.   | E-1) Data format conversion (DXF to Shapefile)            |
|  |   | E-2) Data checking (Shapefile format data)                |
|  | F. Preparation of DTM.  | F-1) Preparation of DTM (Study area)                      |

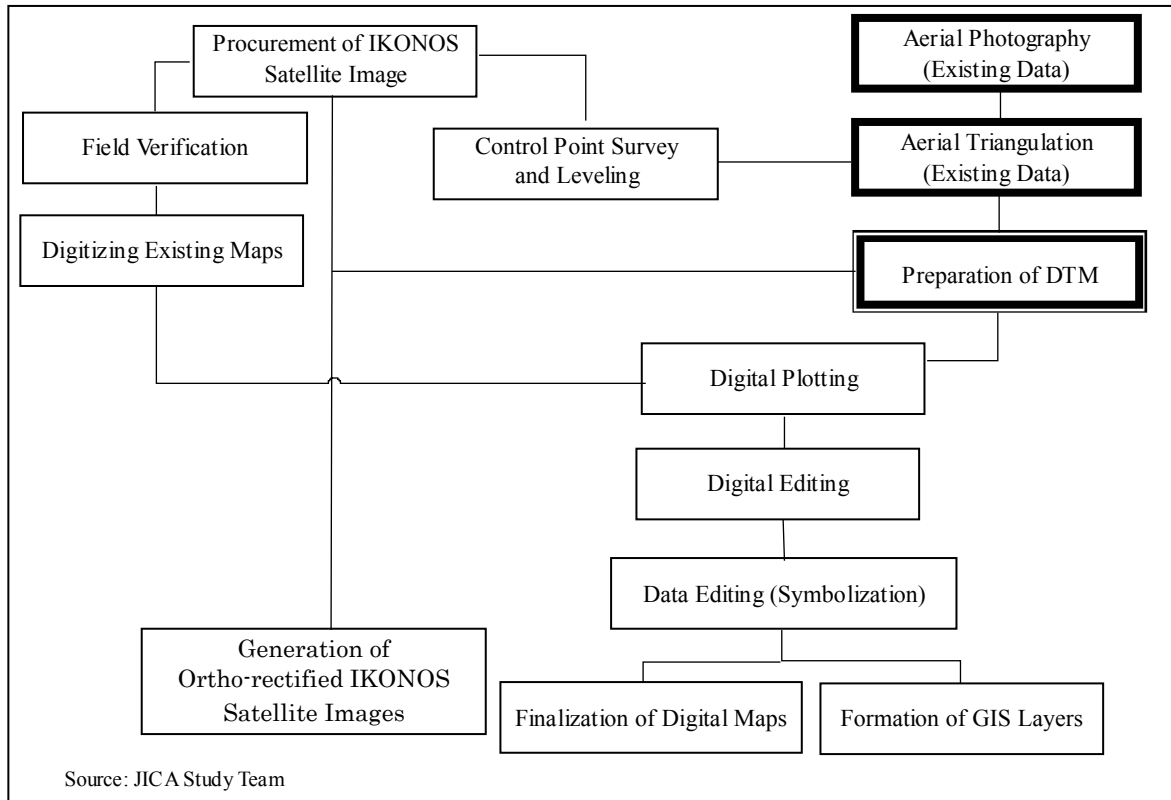
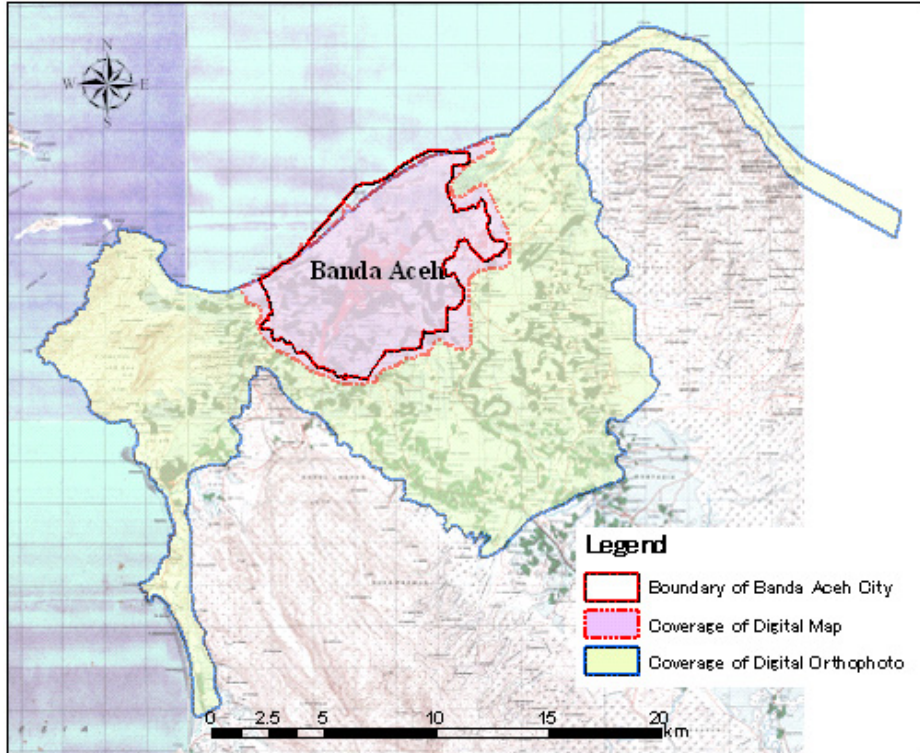


Figure 3.3.1 Work Flow for Topographic Survey

### 3.4 COVERAGE OF DIGITAL TOPOGRAPHIC MAPPING

Digital topographic maps (DM) having a nominal scale of 1:2,000 covered an area of 68 km<sup>2</sup> which is including the Banda Aceh City. The IKONOS satellite image of a natural color covers the area of 350km<sup>2</sup> which contains an area interesting as shown in the following Figures 3.4.1. The Satellite image was rectified to orthonormalized image in using digital terrain model (DTM) and ground control point (GCPs) to use them for a multiple purpose which related to Project.



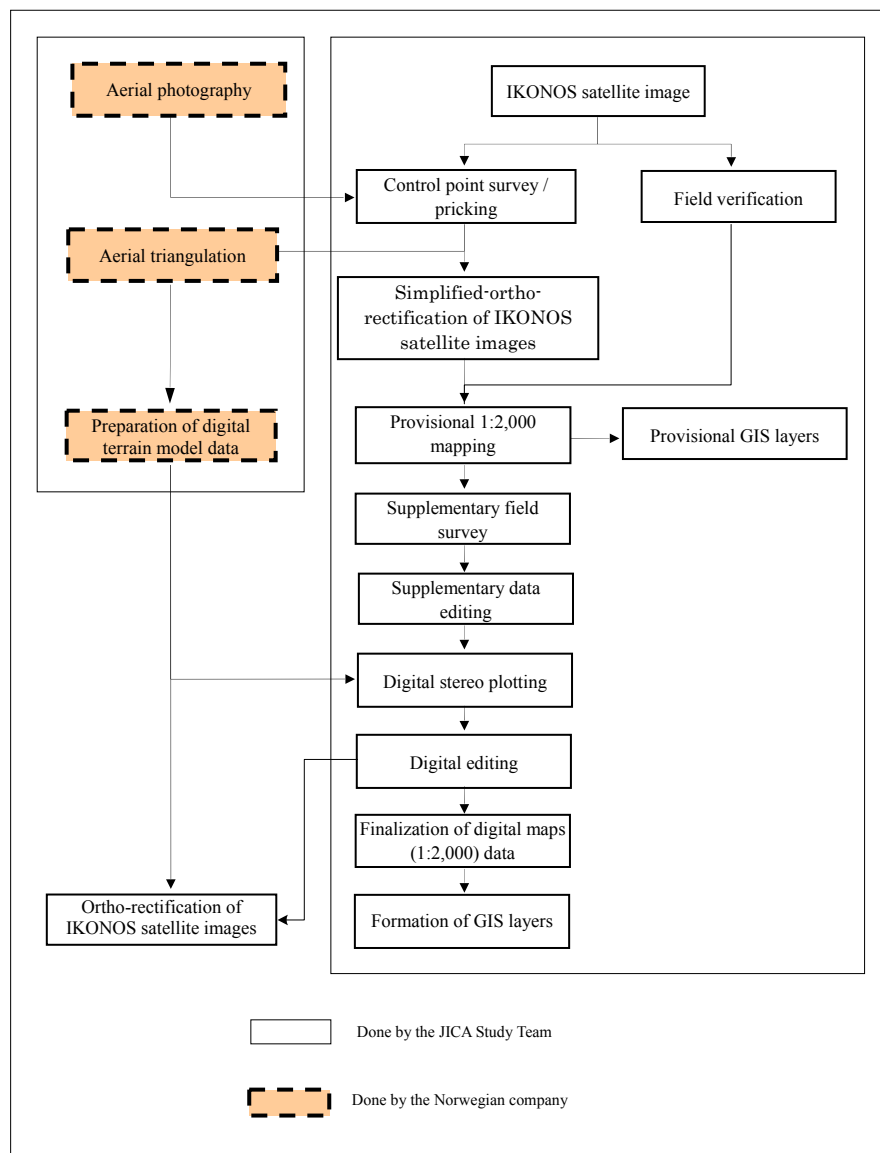
Source: JICA Study Team

Figure 3.4.1 Coverage of Digital Maps and Ortho-Rectified Images

### 3.5 DIGITAL PHOTOGRAMMETRIC MAPPING

#### 3.5.1 Change of Methodology

The digital mapping using Airborne SAR data has been difficult to implement due to the security clearance issue. Therefore, the methodology for the digital topographic mapping at a scale of 1:2,000 was changed from the original plan. Instead of using airborne SAR data, as originally planned, the new plan was used recent digital aerial photography acquired by a Norwegian company as part of another aid project, as shown in Figure 3.5.1 below.



Source: JICA Study Team

Figure 3.5.1 Workflow for Digital Mapping using Aerial Photographs

### 3.5.2 Finalization of Digital Maps (Symbolization)

The symbolization of the feature which composed in point, line, and polygon was executed using the Auto CAD Map software of the Autodesk Co. by the under mentioned specification.

Symbolization of a line used a line symbol of the different color and different line types. The point symbol was replaced with the symbol made with BLOCK command. Alphabet symbols (using two or three characters) were inserted in the polygonal features at the center of each symbol.

Marginal design of the 1:2,000 scale topographic maps was applied by BAKOSURTANAL standards.

Specification for prepared topographical maps:

- Scale to output with plotter: 1:2,000, 46 sheets
- Contour line intervals
  - Index contours: 50 m
  - Intermediate contours: 1.0 m
  - Supplemental contours: 0.5m
- Accuracy
  - Planimetric features 1.0 mm on the map
  - Spot height: 2/3 of contour line interval

### 3.5.3 Formation of GIS Layers

By using ArcGIS of ESRI, the vector data of the DXF format were converted into the SHAPE files.

On the occasion of the data format change, by the features of the data, the data were divided into 19 groups of SHAPE files shown as follows.

Table 3.5.1 Type of SHAPE File

| Name of SHAPE File | Data Type | Contents                             |    |
|--------------------|-----------|--------------------------------------|----|
| 1) Admn_pol        | Polygon   | Administrative information           | #1 |
| 2) Bridge          | Polygon   | Road bridge                          |    |
| 3) Building        | Polygon   | Building information                 | #2 |
| 4) Contour         | Line      | Contour line                         |    |
| 5) Cultiv_area     | Polygon   | Cultivated area                      |    |
| 6) Electric        | Point     | Utility pole                         |    |
| 7) Footbridge      | line      | Footbridge                           |    |
| 8) Foundation      | Polygon   | Ruined building only of foundation   |    |
| 9) Hydro_lin       | Line      | Centre line of stream (river, canal) |    |
| 10) Hydro_pol      | Polygon   | Lake, pond, river canal              |    |
| 11) Land_form      | Line      | Land form                            |    |
| 12) Land_use       | Polygon   | Cemetery only                        |    |
| 13) New_cp         | Point     | Control point and spot height        | #3 |
| 14) Nonculture     | Polygon   | Non Cultivated area                  |    |
| 15) Port           | Polygon   | Port                                 |    |
| 16) Residential    | Polygon   | Residential area                     |    |
| 17) Road_centre    | Line      | Centre line of road                  |    |
| 18) Road_pol       | Polygon   | Road                                 |    |
| 19) Vegetation     | Polygon   | Vegetation area                      |    |

(Refer to APPENDIX-8 for the details of the Formation of GIS Layers)

#1: Administrative information (boundary and name) was acquired from each Kabupaten office.

#2: Building information (annotation for facility name) was investigated on the site.

#3: Elevation of the control points were measured by leveling. Spot heights were observed by photogrammetric mapping.

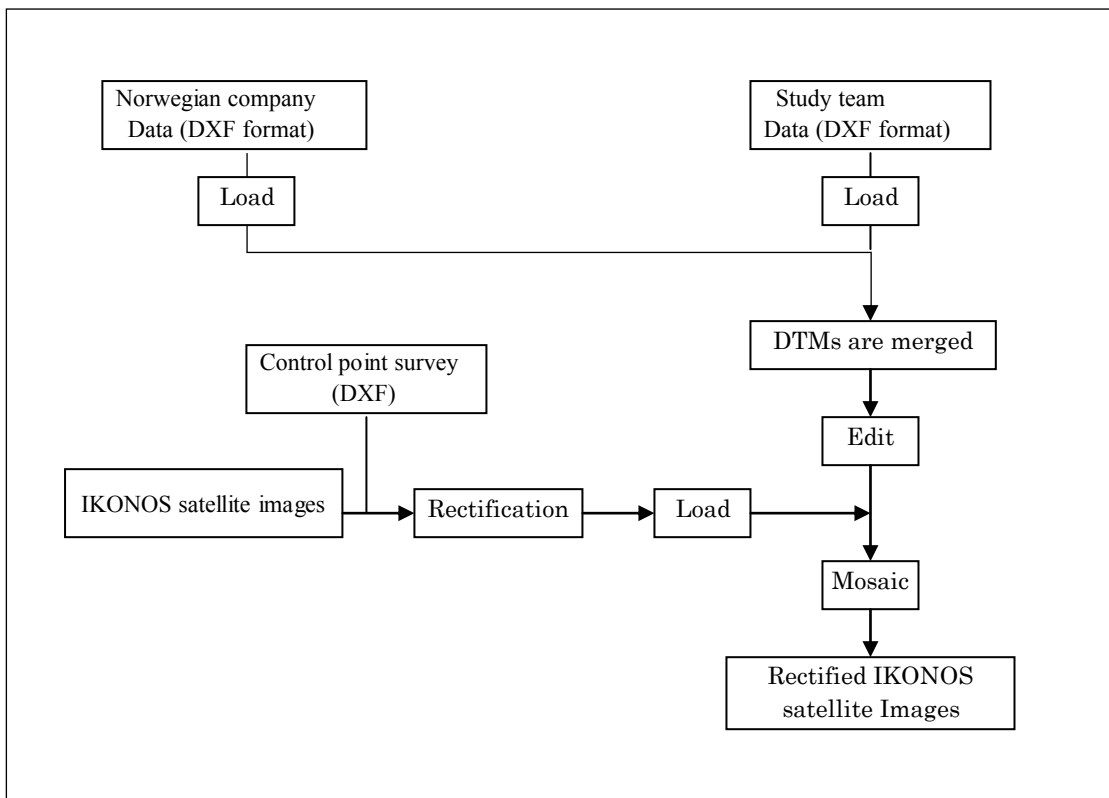
Source: JICA Study Team

### 3.5.4 Ortho-rectified IKONOS Images (350 km<sup>2</sup>)

Ortho-rectified IKONOS images were produced using following DTMs by Socet Set:

- Existing data created by a Norwegian company (DXF format)
- Prepared by Study team using above mentioned aerial photographs and results of the aerial triangulation (DXF format)
- Digital Elevation Data of SRTM (used as a reference data)

GCPs which were extracted from the results of control point survey by sub-contracted parties were also used in the process. The area covered by the ortho-rectified images (Tiff format) comprises 350 km<sup>2</sup> of built-up areas in Banda Aceh City and surrounding localities. The work flow of the Ortho-rectified IKONOS images preparation is shown in Figure 3.5.2 below.



Source: JICA Study Team

Figure 3.5.2 Workflow for Ortho-rectified IKONOS Images Preparation



## CHAPTER 4 COMMUNITY EMPOWERMENT PROGRAM (CEP)

### 4.1 MONITORING AND EVALUATION FOR 12 CEP

#### 4.1.1 Objective and Approach

Community Empowerment Program (CEP), particularly in the earthquake and tsunami disaster affected areas, has been planned and implemented with objectives to revitalize people’s lives and community activities, and to directly benefit to the local people including Internally Displaced Persons (IDPs), through enhancement of livelihood and welfare in 12 project areas.

Taking into account of the tragic situation after the disaster and conflicts in the past, following three (3) approaches are adopted as main pillars in the program;

- 1) Support on livelihood,
- 2) Support on community-based trauma/PTSD healing, and
- 3) Support on rehabilitation of communal water supply/sanitation system.

Capacity development of the communities is also key issue in planning and implementation of community based activities/projects.

#### 4.1.2 Components of CEP and Key Issues

Components of CEP are categorized into 3 main approaches as presented in the table below.

Table 4.1.1 Components of CEP in accordance with the 3 Main Approaches

| Approach  | Components of CEP   |
|---|---|
| Support on Livelihood   | <ul style="list-style-type: none"> <li>- Provision of materials and equipments for supporting livelihood</li> <li>- Training for skill development and business management (Fishery, fish processing, poultry, livestock breeding, agriculture (horticulture, cash crops), household industry (dress making, traditional cake making, etc.)</li> <li>- Institutional development for Micro-finance</li> </ul> |
| Support on community-based trauma/PTSD healing                | <ul style="list-style-type: none"> <li>- Healing through combination of psychological, social and religious activities</li> <li>- Training of community leaders on above mentioned healing method</li> </ul>  |
| Support on rehabilitation of communal water supply/sanitation | <ul style="list-style-type: none"> <li>- Rehabilitation of selected water supply/sanitation facilities</li> <li>- Training for operation and maintenance on the facilities</li> <li>- Education on sanitation and environment (including mangrove plantation)</li> </ul>  |

In addition, capacity development of the target communities is attained by facilitating following activities during the implementation of CEP.

- 1) Planning and implementing village development projects with people's participation
- 2) Cooperative activities for the communities
- 3) Involvement of women in community development

In planning and implementation of CEP, special attention was paid to the following key issues;

- 1) Reviving livelihood as a core of the program
- 2) Respect on religion and culture
- 3) Regional balance of project areas
- 4) Gender Issues

#### **4.1.3 Role of JICA Study Team**

In accordance with the Scope of Works, following works were undertaken by JICA Study Team as technical assistance to 12 CEP.

- 1) To establish framework on realization of project implementation based on needs of the target community, which will be obtained from local/national NGOs.
- 2) To advise SEKNEG regarding procurement process of local/national NGOs in invitation, assessment and approval stages.
- 3) To advise local/national NGOs regarding provision of project fund, progress control, accounting activities and effective implementation of the projects.
- 4) To monitor and evaluate 12 CEP.

As for the item 1), baseline survey was carried out by the study team to realize projects based on local needs. The results were presented in the Final Report (1). However, technical assistance on establishment of framework has not been undertaken by JICA Study Team since this framework had been already established by JICA Indonesia office with due consultation with Indonesia Government. Based on discussions with JICA Indonesia Office, work item 2) and 3) were also decided to be carried out by JICA Indonesia Office since they are in the better position to provide advice to each organization.

Therefore, JICA Study Team mainly carried out the work item 4) of monitoring and evaluation of 12 CEP. It is noted that the role of JICA Study Team is to provide technical assistance to local/national NGOs who have contract with JICA Indonesia Office for implementation of 12 CEP. Relationship among JICA Indonesia Office, local/national NGOs and JICA Study Team, together with more detailed work activities, is described in the figure below.

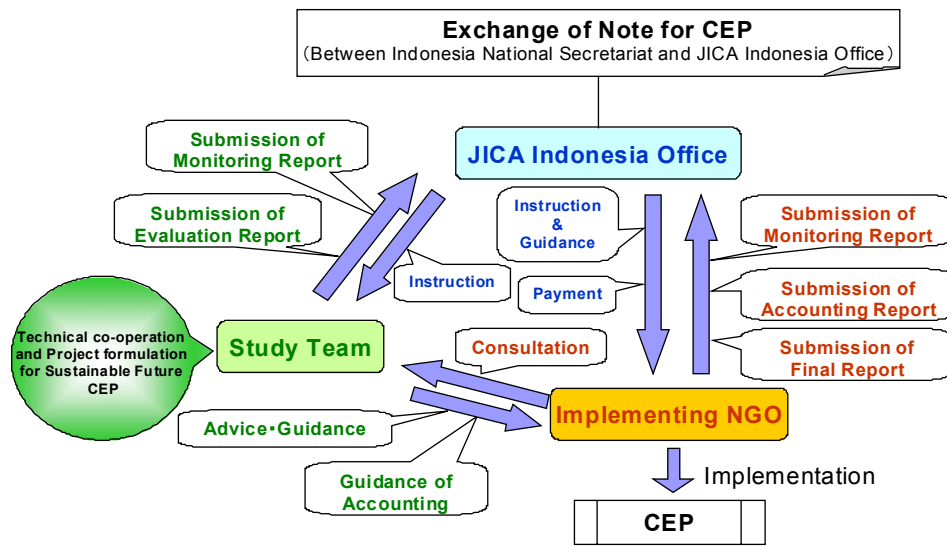


Figure 4.1.1 Relationship among JICA Indonesia Office, Local/National NGOs and JICA Study Team

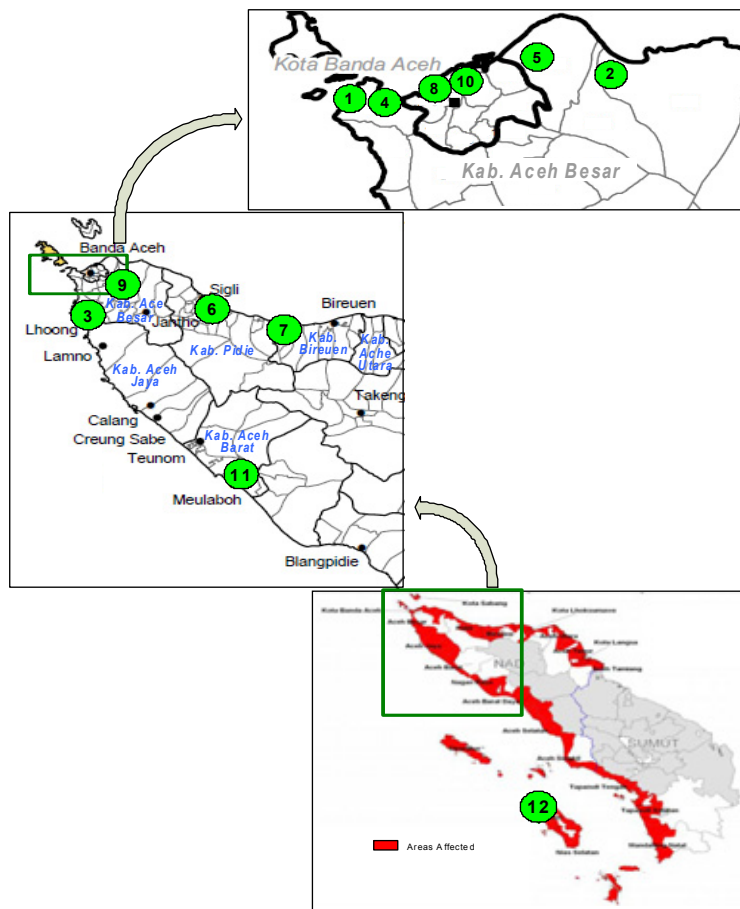


Figure 4.1.2 Location of CEP Project Sites

#### 4.1.4 Monitoring and Evaluation for 12 CEP

Objective for monitoring is to confirm the actual progress of the project and put necessary feed-back to the future activities so that the project will consequently achieve the Outputs and Project Purpose originally set in the planning stage. Unified form of monitoring sheet was prepared in cooperation with implementing NGOs. On preparation of monitoring sheet, responsible persons/implementers were appointed, required inputs/costs were decided, and implementation schedules were set with detailed activities. Achievement of expected Outputs was also monitored with planned targets. Unified form of the monitoring sheet is presented on the table below.

Table 4.1.2 Unified Form of Monitoring Sheet

| Activities                                      | Target<br>(indicator of<br>expected<br>results)         | Responsible<br>Person/<br>Implementer | Required<br>Inputs/<br>Costs | Schedule | Issues  |
|---|---|---------------------------------------|------------------------------|----------|---|
| 1. Activities described in<br>Project Documents | (Planned Target, Staffing, Input/Cost and Schedule)     |                                       |                              |          | Important things to be<br>noted and reported. |
|   | (Actual Achievement, Staffing, Input/Cost and Schedule) |                                       |                              |          |   |
| 1-1. Broken down<br>activities                  |   |                                       |                              |          |   |
|   |   |                                       |                              |          |   |
| 1-1-1. Further broken<br>down activities        |   |                                       |                              |          |   |
|   |   |                                       |                              |          |   |
|   |   |                                       |                              |          |   |

Monitoring staffs in JICA Study Team regularly visited project sites and confirmed actual progress and achievement on each activity and Output. Results are summarized into above mentioned form and reported to JICA Indonesia Office every month. Necessary technical assistance on project implementation, as well as financial and schedule management, was provided by the study team to NGOs based on the regular monitoring results.

## 4.2 ASSESSMENT ON 3 MAIN APPROACHES

Based on monitoring results for 12 CEP, assessment on 3 main approaches was undertaken with reviewing outputs and outcomes from each program. Relationship between main approaches and components of each project is shown in the following table.

Table 4.2.1 Relationship between 3 Main Approaches and Project Components

|  | Project No.1 | Project No.2 | Project No.3 | Project No.4 | Project No.5 | Project No.6 | Project No.7 | Project No.8 | Project No.9 | Project No.10 | Project No.11 | Project No.12 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|
| <b>Livelihood Approach</b>                   | ○            |              |              | ○            | ○            | ○            | ○            | ○            |              |               |               | ○             |
| <b>Psycho-social Approach</b>                | △            |              |              | △            | △            |              |              |              | ○            | ○             | ○             |               |
| <b>Water/Sanitation/Environment Approach</b> | △            | ○            | ○            | *            | *            |              |              |              |              |               |               |               |

Note: ○ stands for the approach is adopted as a main component of the project.  
 △ stands for the approach is adopted as a sub-component of the project.  
 \* stand for only mangrove plantation was carried out in water/sanitation/environment approach.

### (1) Livelihood Approach

This is the largest pillar of 12 CEP, 7 projects adopted this approach as a main component of the project. Following observation have been made during implementation of these projects.

Basically this component takes following steps:

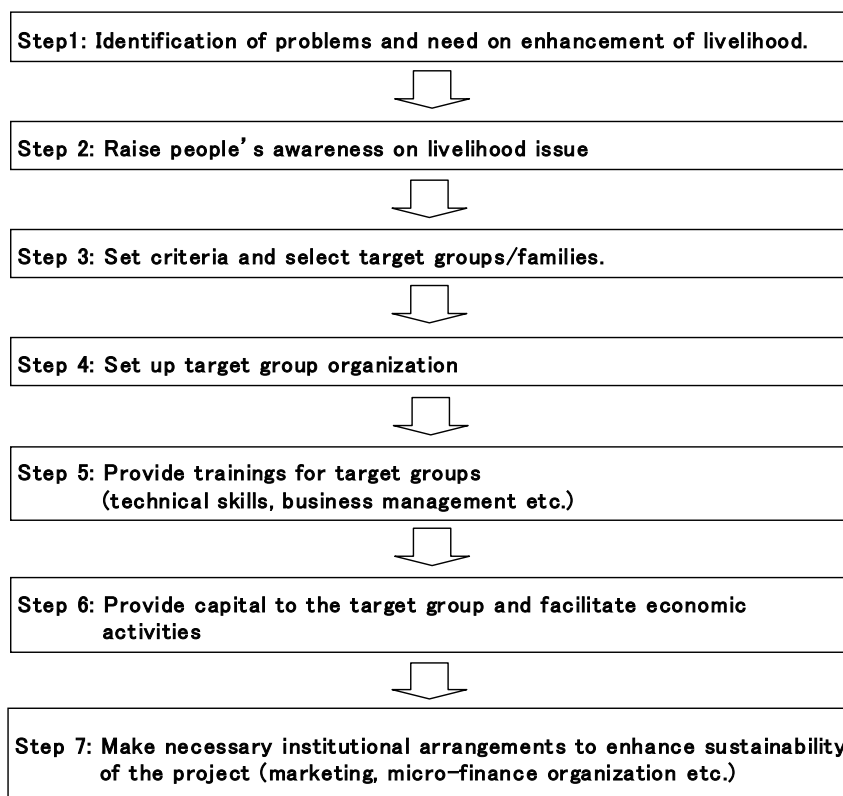


Figure 4.2.1 Basic Steps on Livelihood Approach

Average monthly income generated by CEP is summarized on the table below.

Table 4.2.2 Average Income of Target Groups

| Type of Activities         | Monthly Income<br>/person (Rp.)                            | Remarks                                |
|----------------------------|--|--|
| Fishery                    | 100,000 – 4,100,000  | Fluctuation of income is very high.    |
| Kiosk management           | 600,000 – 1,500,000  | (Capital; Rp. 1.2-1.25 million/person) |
| Cake making                | 150,000 – 400,000  | (Capital; Rp. 1.0-1.25 million/woman)  |
| Salt making                | 600,000 – 1,200,000  | (Capital; Rp. 3.4 million/woman)       |
| Agriculture, livestock --- | Farmers have not generated income by the end of Jan. 2006. |  |
| Goat breeding              | Income has been generated by the end of Jan. 2006.         |  |
| Chicken/duck raising       | Income has been generated by the end of Jan. 2006.         |  |

Income generated by fishery is the highest among activities carried out in CEP. However, there was big fluctuation on monthly income in this sector. This is partly because of weather condition and operation by each fisherman. Some fishermen could not be fully engaged in fishery activity since they were busy on rebuilding their house or sometime engaged in other reconstruction works. On the other hand, income from kiosk management and cake making was stable even the profits from the activities are smaller than those from fishery. Income from agriculture and livestock activities could not be confirmed owing to the long preparation period required for these activities.

In general, activities carried out under livelihood approach were successful for the target groups to re-start their individual economic activities, but had small impact on cooperative works. Cooperative works such as marketing and/or joint procurement of materials can be facilitated in the future. For sustainability of the project, strengthening on micro-finance organizations is recommended. Furthermore assistance by local NGOs on these activities is preferable.

## (2) Community-based Trauma/PTSD Healing Approach

Among 12 CEP, three (3) projects adopted this approach as a main component, specifically Projects No.9, 10 and 11. Project No. 9 is targeted on women living in 4 IDP camps in Banda Aceh City and Aceh Besar. Projects No. 10 and 11 are targeted on children in Banda Aceh and Meulaboh respectively. Projects No.1, 4 and 5 also adopted this approach but as a sub-component to support their livelihood approach.

For women's groups, this activity was carried out on three phases, 1) Psychological recovery from disaster and/or conflict, 2) Psychological strengthening on gender sensitive issue, and 3) Capacity building of women in a community. Vocational training was also carried out on each phase as a tool of intervention and consequently empowers women both in social and economic aspects.

Psycho-education for children was carried by facilitating religious, arts and sports activities and also by providing opportunity to read books. Medical and supplemental food services have also been provided to the children in order to strengthen their physical health.

As a result from these activities, psychological aspect of women appeared to be strengthened. Outputs from two projects targeted on children, namely Projects No. 10 and 11, also had positive impact on psychological aspect of the children. Children become more cheerful and creative than before. By comparison of these two projects, it can be said that well focused scope of work and implementation with qualified personnel are keys to enhance achievement from this kind of psycho-social approach.

### (3) Water / Sanitation and Environment Approach

Projects No. 2 and 3 adopted this approach as a main component while Project No. 1 added this approach as a sub-component. Projects No. 4 and 5 carried out only mangrove plantation as a part of project activities with taking livelihood approach.

This approach basically consists of 3 phases, namely 1) Facility construction, 2) Establishment of community organization for operation and maintenance (O&M), and 3) Sanitation and environment education. Successful implementation on each phase ensures effectiveness and sustainability of the project. National NGO, called *Yayasan Dian Desa* having rich experience on this field, carried out Projects No. 2 and 3. Facility construction as well as establishment of community organizations for O&M was successfully undertaken. However, the established O&M system is still not sufficient. Only 1 sub-village, called Ujung Kareng in Neuheun Zone, has succeeded to start collecting water charge from the people (Rp. 3,000/KK) since January 2006. In other villages, specifically 1 village, 3 sub-villages and 1 camp for Project No. 2 and 22 villages in Project No.3, collection of water charge are still on the process of discussion among people. Collection of water charge together with transparent management of the facilities is essential to ensure sustainable O&M. Sanitation and environment education for the people would be also effective to enhance people's willingness to pay since it facilitates understanding of people on the benefits from these facilities.

Besides water supply facility, construction works on MCK (facility with toilet/bathing booths and washing places) in Project No.1 was largely delayed compared to the original schedule. Only two (2) MCK have been constructed out of ten (10) planned, due to delay on people to come back to their home village. They have started coming back from September 2005, which was more than 6 months after the project commencement. Exact location of planned facility as well as its standard design was not able to be decided until then. This kind of unique circumstances should have been taken into account from the planning stage in order to realize more efficient cost management on a project implemented in a disaster affected area.