

VII 英文報告書

VII-1 Report on the establishment of a Refugee Processing Center for the Indochina Refugees in Indonesia

(注) この報告書は日本調査団が提出したものとUNHCR及びインドネシアで作成したものとを合せてDraftreportとしてUNHCRで作成したものである。

日本側の分担した事項はAnnexの目次に記してある。

REPORT ON THE ESTABLISHMENT OF A REFUGEE PROCESSING

CENTER FOR INDOCHINA REFUGEES IN INDONESIA

REPORT ON THE ESTABLISHMENT OF A REFUGEE PROCESSING CENTER
FOR INDOCHINA REFUGEES IN INDONESIA

A. INTRODUCTION

1. The ASEAN Foreign Ministers in their Statement in Bangkok on February 21, 1979 declared their readiness "to make a positive and concrete contribution to the alleviation of the burden of ASEAN member countries caused by the Indochina refugee problem, by providing a place or places in the ASEAN region to be utilized as a site(s) for a Refugee Processing Center (RPC)".
2. Subsequently a meeting was held in Jakarta on May 15-16, 1979 at the invitation of the Government of Indonesia, to discuss the modalities for the establishment of a RPC on a site generously offered by that country for this purpose. This meeting was attended by delegations of the ASEAN countries and 19 interested governments (including the Socialist Republic of Vietnam) and UNHCR.
3. Admission to the RPC would be decided upon by the ASEAN countries and would be restricted to those Indochina refugees who have been accepted by third countries for resettlement but whose travel to these countries from the country of first asylum cannot take place within two months. Resettlement countries would endeavour to arrange for the onward travel of any refugees from the RPC within a reasonable period in order to ensure maximum usefulness of the Center.
4. The government providing a site shall retain the sovereignty, administrative control and security responsibility over the site. It was agreed that the cost of development, maintenance and administration of the RPC as well as the logistic requirements including transportation and transfer of Indochina refugees to the proposed site, shall not be borne by the country providing the site.
5. The administration of the Center would be entrusted to UNHCR which may seek the cooperation and assistance of agencies, governmental or voluntary, for the purpose.
6. The Government of the host country, with any external assistance which may be put at its disposal, would ensure that the basic infrastructure and adequate, suitable land for the establishment of the Center are available.

7. On the other hand, UNHCR, to the extent funds are put at its disposal, shall undertake responsibility for the creation of facilities directly related to the RPC and for providing care and maintenance for the refugees admitted.

8. It was also agreed that a feasibility study would be undertaken jointly by the Government offering the site and UNHCR, the results of which would have to be approved by both of them.

B. THE ESTABLISHMENT OF A CENTER IN INDONESIA

9. The site offered by the Government of Indonesia is located on the island of Galang, Riau Archipelago. It will be able to accommodate 10,000 persons at any one time. (Brief geographical and physical description of the island). The Government of Indonesia has taken steps to start improving the infrastructure of the island.

10. In order to study the feasibility of the offer, a survey was undertaken jointly by the Government and UNHCR in the period 18 June - 3 July 1979. The study group was composed of Indonesian and UNHCR officials, and of experts made available by the Government of Japan. Extensive discussions were held both in Jakarta and in Tanjung Pinang, the capital of the Archipelago, while the group visited Galang for a number of days.

11. The experts forming part of the team reported on their findings in their respective fields of competence. They have reached the conclusion that the construction of a RPC on the site offered is technically feasible. The recommendations of the team have been accepted both by the Government of Indonesia and UNHCR; they may be found in the annex.

12. A budget, equally attached, has been prepared which covers both capital expenditures, recurrent expenditures for one year, assistance to refugees, also for one year, and a contingency reserve. The total estimated amounts to US\$ 13,000,000.

13. In view of this, the High Commissioner wishes to proceed without delay with the establishment of a RPC in Indonesia. He appeals to Governments to give generous support to the Trust Fund which has been set up for this purpose and which will be administered by his office. As soon as sufficient pledges have been received, work on the construction of the Center will commence.

14. It should be noted that the Government of Indonesia has started the construction of barracks on an adjacent site of the same island to accommodate refugees who have found asylum in the country. The camp will be administered

by the Indonesian authorities but UNHCR is making a financial contribution to the Government for this purpose. It is at present planned that the camp will have a capacity to shelter 10,000 persons.

15. The Government and UNHCR are in agreement that the standards of accommodation of both facilities should be as similar as possible and it is envisaged that a number of services (e.g. in the fields of public health, storage, courses, leisure time activities, etc) will be shared.

Members of Feasibility Study Team for
Refugee Processing Center in Indonesia

Government of Indonesia :

- Roeslan Soeroso - Department of Foreign Affairs, Directorate General for Security for Foreign Relations.
- Arnada - Department of Interior Social Political Directorate.
- Soeharsoyo - Department of Defence Engineering Corps, Regional & Naval Logistic Office.
- Poernomo - Department of Defence Engineering Corps, Regional & Naval Logistic Office Tanjung Pinang.
- A. Effendi - Regency of Tanjung Pinang Public Relations

Experts made available by the Government of Japan :

Kazuaki Suma, Co-ordinator

Hideo Tokuhiko, General Planner

Shigeharu Tomehara, Construction and Civil Engineering

Hideki Yamazaki, Water and Sanitation

Yutaka Saito, Public Health and Housing

All the above mentioned persons are members of the International Engineering Consultant Association (IECA) of Japan.

The group was accompanied by Hirohari Hashi, Second Secretary of the Embassy of Japan in Jakarta and by Hirayoshi Sakuma of the Second Southeast Asia Division, Asian Affairs Bureau, Ministry of Foreign Affairs Tokyo.

United Nations :

Ms. Frances Maria Yasas, UN Social Welfare and Development Center for Asia and Pacific, Manila

Victor Deermann, UNHCR Consultant, Team Leader

Peter Meijer, UNHCR Headquarters Geneva, Assistant to Team Leader.

LIST OF ANNEXES

- ①. General lay-out of the RPC
- ②. Improvement of the physical infrastructure of the island
- ③. Construction of the RPC
- ④. Water supply and sanitation
- ⑤. Energy supply
6. Transport facilities
7. Telecommunications
- ⑧. Public health
9. Flow chart for movement of people, food and supplies
10. Administration of RPC
- ⑪. Budget
12. Time table

Map of location of Galang Island

Map of Sites on Galang Island

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I. General Description of RPC

1. Site Selection

Government of Republic of Indonesia (GRI) proposed three alternative sites for RPC, namely Site I (Surat area), Site II (Simpang Tiga area) and Site III (Ganbil area).

According to field reconnaissance and data analysis, Mission concluded that the most suitable site for RPC would be Site II (Simpang Tiga area). Some of the major reasons are set out below :

- 1) GRI already selected Site I for National Refugee Camp and it is already construction.
- 2) Site III is located 3 km away from Site II father into the Island and road appears to require substantial rehabilitation.
- 3) Site III appears to require substantial clearing and levelling because of deep forest.
- 4) Site II appears that it involves minimum clearing & levelling ground than Site III and immediately able to construct RPC.
- 5) It is felt preferable not to affect natural environment around Site III since the Gong River flow beside Site III appears to be the only water source available for RPC.
- 6) Though Site II has these disadvantages on water sources, since quantity of water from river nearby Site II is not considered sufficient to supply water to 10.000 people. It is, however, found feasible to obtain sufficient water from the Gong River to Site II by installing water intake.

2. The RPC Site (Site II)

The proposed site for RPC is previously used as a farmland and being abandoned for several years, with an open area of approximately 35 ha which is sufficiently wide enough to accommodate 10,000 people, giving population density of 290 persons per hectar.

The topography of the site is generally hilly, however, the slope is gentle and moderate allowing easy walking activity giving good drainage condition. Vehicular movement will be easily secured by providing an adequate road lay out. (see attached topography map. Fig1)

There are two streams flowing through the Site, however water flows are found insufficient to be utilized as one of water sources for 10,000 people. It is therefore, considered more appropriate to utilize these streams for drainage purposes with minor improvement works. Water right issue would not arise since there are no inhabitants in the down stream of these streams.

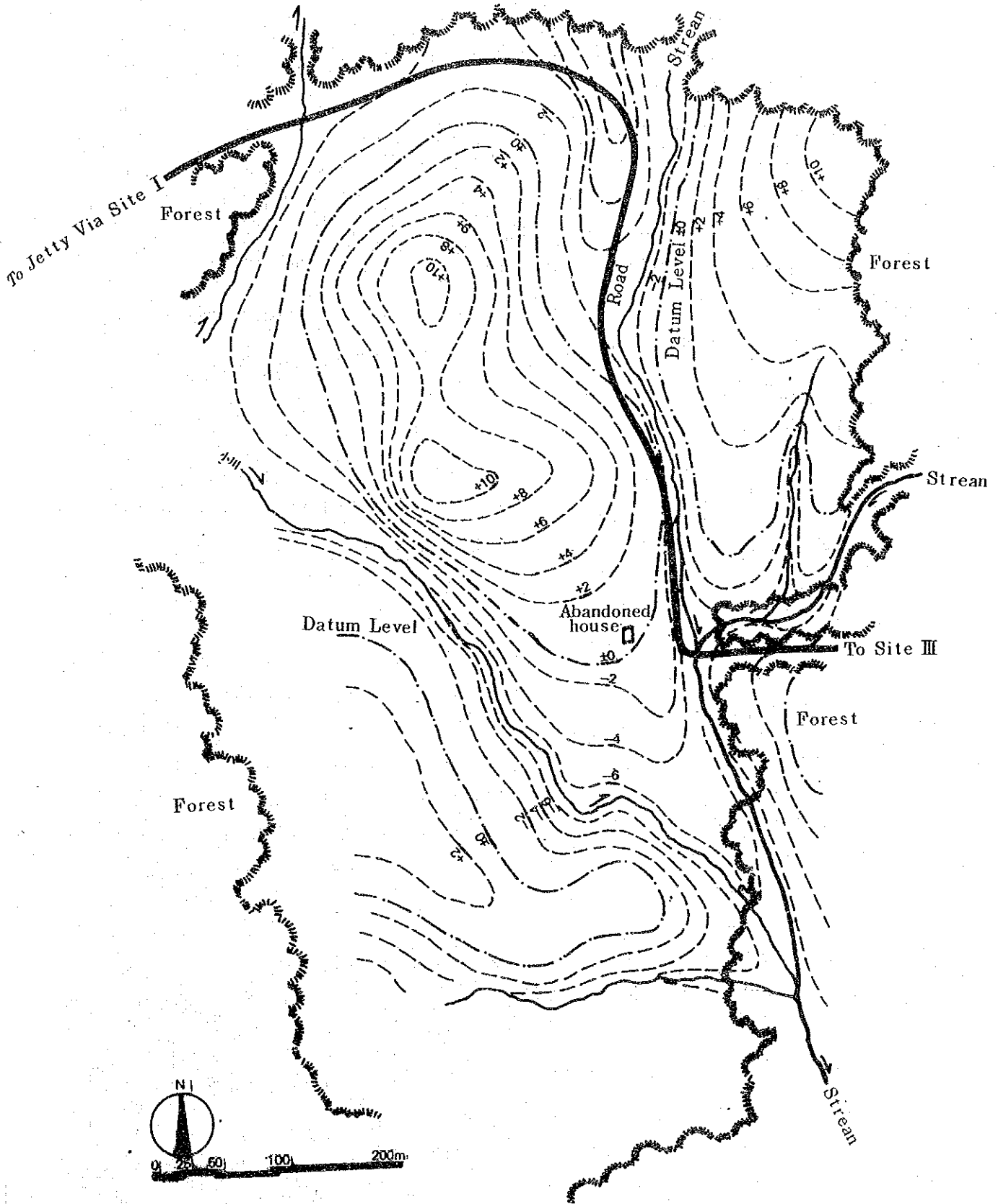
During a course of site observation by the Mission, no particular difficulties that may affect immediately commencement of construction activities was identified.

In view of the foregoing, Mission concluded that Site II is the most suitable site for the establishment of RPC.

Fig 1
Site Topographical Map

Note: This topographical map was prepared by the Mission on the basis of site observation and preliminary site survey conducted by the Indonesia side. Scale and contour lines are approximate and limited for use for planning purpose only.

Site Topographical Map



3. RPC facilities and Grouping Structure

Proposed RPC facilities would be classified into three categories in relation to the grouping structure of the people. These are : 1). Central Administrative Facilities, 2). Community Group Facilities, and 3). Dwelling Cluster Units.

1). Central Administrative Facility Group

- * Administrative Offices for UNHCR and Indonesian Government.
- * Hospital for use of RPC and Indonesian Refugee Camp.
20,000 refugees in total.
- * Guest House
- * Staff Housing with Dining and Kitchen facilities.
- * Garage and Maintenance Workshop
- * Power House
- * Guard Posts
- * Open Recreation Field
- * Store House will be located adjacent to jetty.

2). Community Group Facilities for approximately 2,000 people

- * Meeting Room / Class Room
- * Dispensary
- * Shop
- * Open Field
- * Waste Collection / Incineration Pit

3). Dwelling Cluster Units to accommodate 300 people

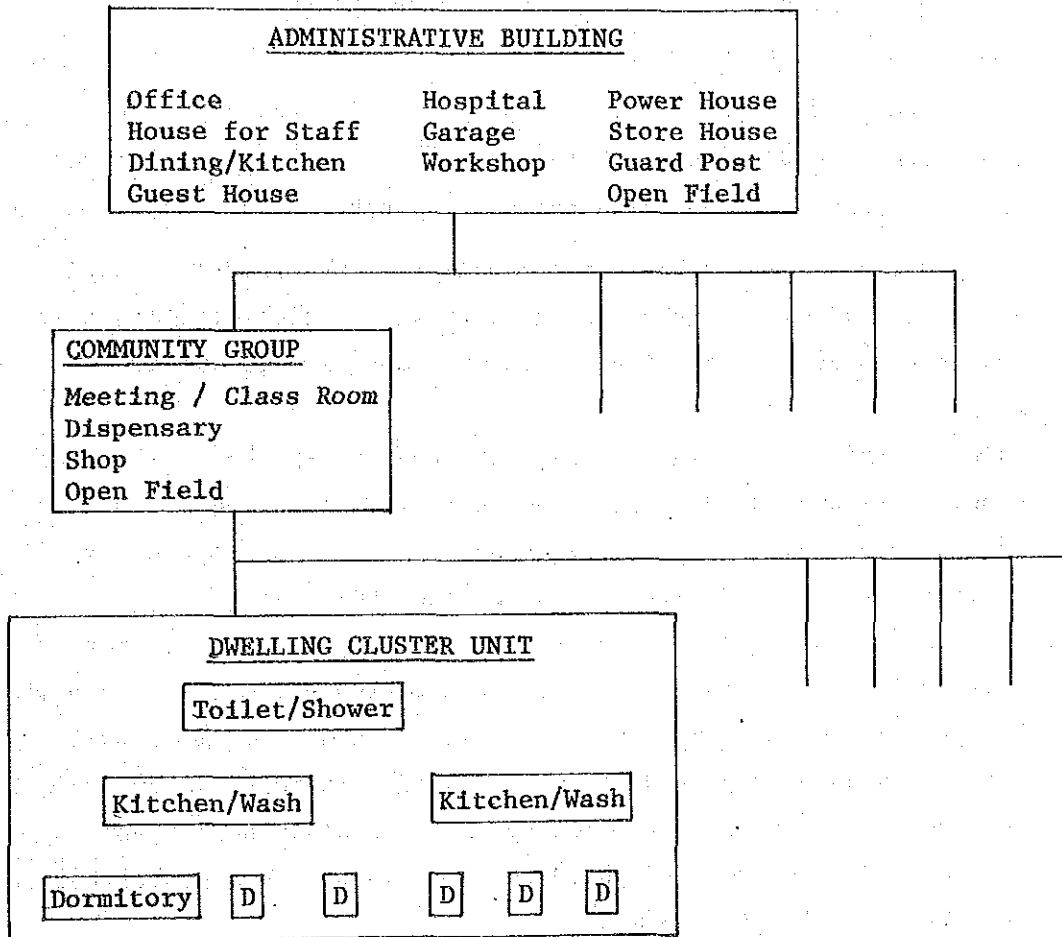
- * 6 (six) Dormitories each dormitory to house 50 people.
- * 2 (two) Communal Kitchens with washing basin combined.
- * Communal Toilet/Bath Units one each for male and female.
- * Septic Tank
- * Court Yard

These facility groups will be structured in hierarchical manner taking into consideration physical layout prepared based on specific features of the site.

Conceptual grouping structure is as follows, and is illustrated in Fig. 2 _____

6 to 8 of the dwelling cluster units will be combined into one Community Group, and 5 of the Community Groups will make up RPC together with the Central Administrative Group.

Fig. 2



CONCEPTUAL DIAGRAM OF GROUPING STRUCTURE
REFUGEE PROCESSING CENTER IN GALANG

4. General Layout Principles

As set out below, some of the basic concepts in preparing preliminary are:

- 1). Maximum use of existing land characteristics and topographic advantages be taken into account in preparing layout design with view to minimizing ground levelling works and time for site preparation works.
- 2). Various facilities required be constructed in such a manner to ensure most efficient and effective operation of RPC.

Following study on data and information currently available and through mission's field-trip to Galang Island, a conceptual layout plan was developed in draft form as illustrated in attached layout map (see Fig. 3).

Following are some general descriptions of the suggested layout plan :

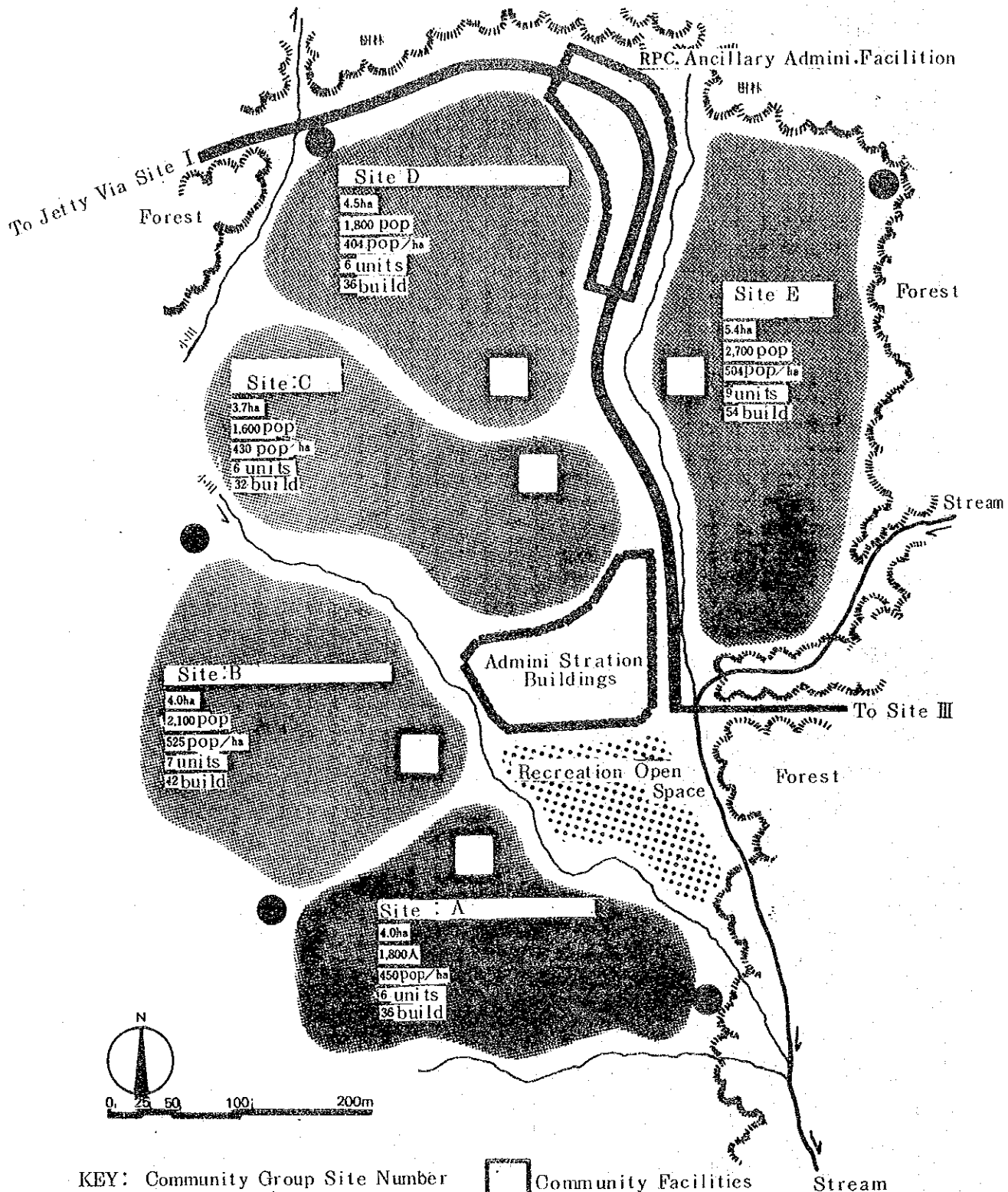
- 1). Existing road will be widened and improved to the local standard and be used as construction access road and also as operational access road.
- 2). Major administrative facilities, such as offices, hospital, power house, workshop, garage, guest-house etc. will be located within central area together with open space for recreation where the land is fairly flat and easily accessible from the road.
- 3). Ancillary RPC facilities such as power house, maintenance workshop will be located at most convenient place along-side the access road.
- 4). For people's community group, 5 number of parcels of land were identified as best suited for grouping of structures described above. Indicative figures of site area, population distribution and population density etc. were computed as shown in attached conceptual layout plan and also in Table 1 .

Table 1 .

Indicative Population Distribution Plan

Group Number	A	B	C	D	E	Total/ Average by group
Site Area (hectares)	4.0	4.0	3.7	4.5	5.4	21.6/4.32
Population (persons)	1,800	2,100	1,600	1,800	2,700	10,000/2,000
Number of Dormitories (buildings)	36	42	32	36	54	200/40
Number of Dwelling Clusters (units)	6	7	6	6	9	34/6.8
Population Density (persons per hectare)	450	525	430	404	504	-/463

Conceptual Layout plan of RPC in Galang Island,
 Republic of Indonesia.



KEY: Community Group Site Number Community Facilities
 Site Area Guard Post
 Population
 Population Density
 Number of Dwelling Cluster Unit
 Number of Dormitories

5. Advantage of Dwelling Cluster Unit

In view of the foregoing, it is recommended to apply a concept of a dwelling cluster unit for the establishment of RPC as a basic and fundamental unit considering daily living requirements of the people to build in general description of RPC.

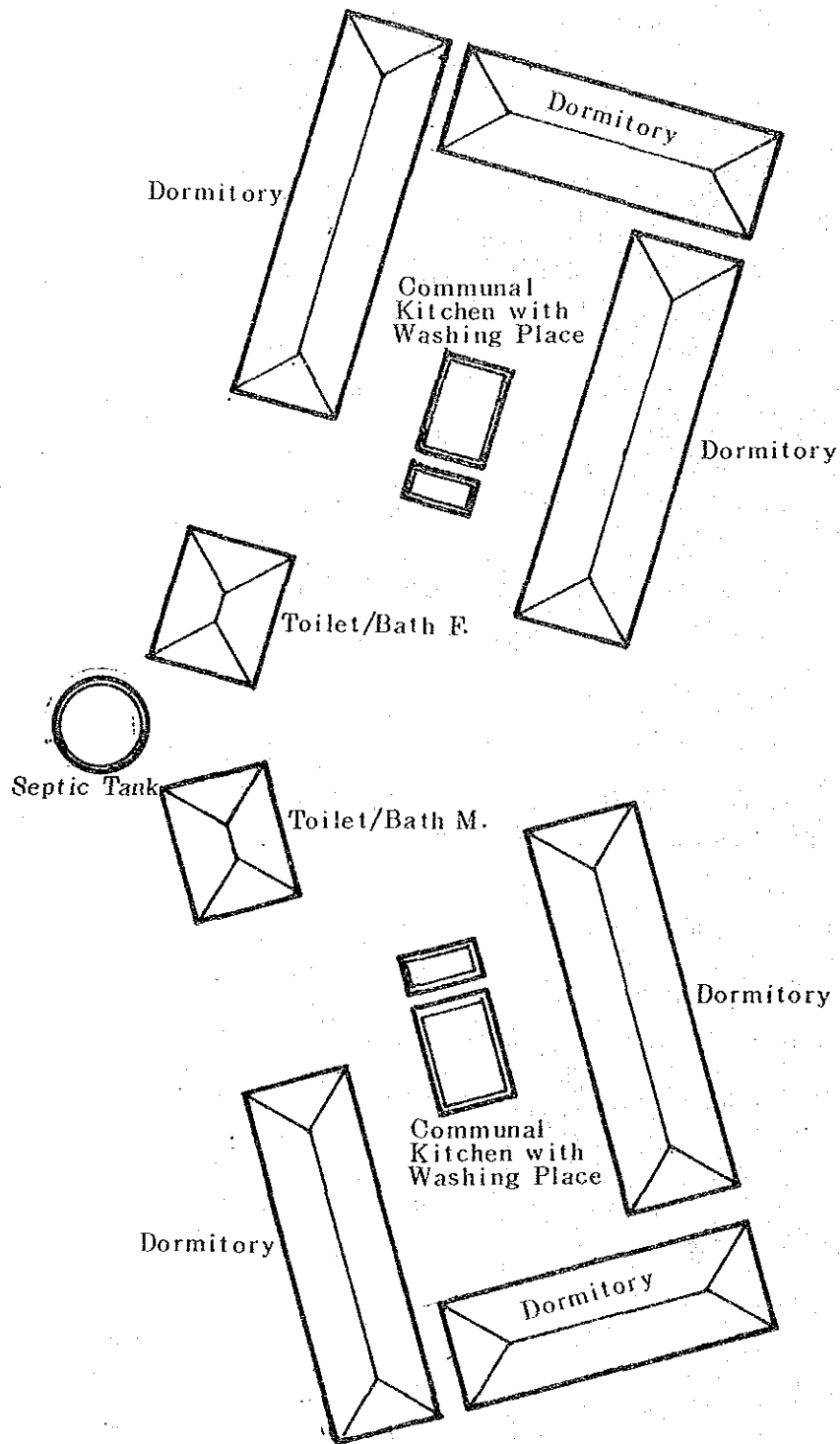
Suggested conceptual set up of the dwelling cluster unit is illustrated in the attached Fig. 4

Some of the major points of importance related to the dwelling cluster unit is to have provisions of communal kitchen, toilet/bath and other communal facilities for common use by the residents of several number of dormitories.

Some major advantages of this specific as compared with ordinary each dormitory/each facility system are set out below :

- 1). Suggested communal use of facilities is considered best suited having an impact in minimizing per-capita water consumption, since water source is rather limited on the island and have to have certain provisions to ensure sufficient water supply for 10,000 people.
- 2). By combining water utilization facilities within a certain small area and further by concentrating water supply system, sewage treatment and drainage facilities in a limited small area to the extent possible, cost of construction of these facilities would be minimized. And in addition, sanitation control would be more effective rather than to provide these facilities in wider area.
- 3). Suggested communal facilities would help facilitate communal interactions of refugees to improve and encourage self-control, self-organization and self-maintaining by themselves.

Conceptual Layout of Typical Dwelling Cluster Unit.



6. Review on Indonesian Layout Plan

The mission has reviewed a layout plan prepared by the Indonesian side, and found that it is well prepared and acceptable in general, having similar criteria and conceptual set up with that of the Mission as described in previous Chapter.

However, certain improvements and modifications are recommended to be made in the course of preparing detailed design taking due consideration to an unified concept together with suggestions made the Mission as stipulated in the Chapters concerned.

Particular attention should be given to the specific criteria and guidelines as set out below in undertaking further study and in preparing detailed design of RPC.

- 1) Application of concept of grouping various structures of RPC facilities.
- 2) Establishment of appropriate open space network.
- 3) Flexibility of internal road net work system duly considering specific features of the land characteristics to the maximum extent.
- 4) Elimination of river relocation works.

II. Improvement of Basic Infrastructures

General

Road from the pier to the site is 6 meters in width and is unhardened and generally not well maintained. Wild bushes have covered part of the road especially from site I to site II. Irregular points in the road surface in some places rectified by the placement of wooden planks to facilitate passage. Substantial rehabilitation and improvements are considered essential to ensure efficient delivery of various equipments, machinery and materials for the construction of RPC at site II.

The existing jetty nearby Sinyantung is wooden made of simple nature and being used by the sawmill. The sea-depth around the pier is 4.5 to 14 meters, there are no waves but current is rather strong.

Jetty

It is considered feasible to construct a new wooden-made jetty nearby the existing one and therefore it is not necessary to construct a new road connecting the new pier with the existing road from Sinyantung to the site. Mission has assumed subject to further study that the new pier to be constructed would have the capacity of about 200 tons.

Road and Bridges

Total length of the approach road from the pier to the site is approximately 6 km.

With a view of minimizing maintenance cost, it is recommended to rehabilitate and improve existing road with Tarford pavement with drainage ditches on both sides of the road. Class C in accordance with the Indonesian standard is considered appropriate.

III. Construction of RPC

1. General Condition

In light of urgency of construction of RPC and with a view to minimizing cost and time required for construction, Mission considered the following three points as the basic factors :

1. Kinds of housing
2. Adequate/modest standard of housing for refugees
3. Construction materials

There are two methods of construction, namely, (i) local fabricated wooden housing, (ii) pre-fabricated housing. Mission considered that the local type is appropriate and feasible in light of appropriate technology available. And further it's cheaper and easier to transport from other islands and large quantity of timber and wood would be made available from Kalimantan, Sumatera etc.

In addition, cheap labour force would be supplied from nearby islands. Mission does not agree to avail of refugee labor during initial period of construction in light of possible confusion due to different established practices and communication difficulties etc.

2. Kinds of housing

For effective operation and efficient management of RPC accomodating about 10,000 refugees, following housing is considered most appropriate:

I Refugee Housing

1. Dormitory
2. Kitchen / wash
3. Toilet / shower

II Community Center

1. Meeting / class room
2. Dispensary

III Administrative Housing

1. Office
2. House for Staff
3. Dining / Kitchen (for staff)
4. Guest House
5. Hospital
6. Store House

- 7. Workshop
- 8. Power House
- 9. Garage
- 10. Guard Post

3. Standard of Housing

Adequate / modest standard of each housing is as follows :

- | | | |
|---------------------------------|----------------------|--|
| Dormitory | - capacity | : 50 persons / unit |
| | - Floor area | : 4 sq.m./ person X 50 = 200 sq.m./unit |
| | - structural request | : natural ventilation and lighting flexible partition like as bamboo panel or curtain to allow privacy |
| Kitchen/wash | - capacity | : 150 person/unit or 30 family/unit. |
| | - floor area | : 0.5 sq.m./person x 150 = 75 sq.m./unit. |
| | - structural request | : possibility of natural ventilation 30 ovens and centralized sink for kitchen per unit. |
| | | Centralized sink for wash per unit |
| Toilet / shower | | |
| | - capacity | : 300 persons / unit |
| | - no. of rooms | : 1 room/10 persons x 300 = 30 rooms/unit
(male : 15, female : 15) |
| | - floor area | : 4.5 sq.m./room x 30 = 135 sq.m./unit. |
| | - structural request | : water proof wall
cement water closet and tub per room
with one set of septic tank per unit. |
| Meeting/class room - floor area | | : 100 sq.m. x 2 rooms
50 sq.m. x 2 rooms
25 sq.m. x 2 rooms
50 sq.m. x others |
| | | 400 sq.m |
| Dormitory | - floor area | : 50 sq.m. |
| Shop | - floor area | : 50 sq.m. |
| Office | - No. of staff | : 150 staff |
| | - floor area | : 6 sq.m./staff x 150 = 900 sq.m. |
| | - structural request | : office will be separated into 2 or 3 units. |

House for staff - type and floor area : administrations house
 60sq.m. x1=60sq.m.
 asst. administration houses
 50sq.m. x2=100sq.m.
 other staff's apartment house
 40sq.m. x25=1000sq.m.
 other staff's dormitory
 8sq.m./person x125=
 1000sq.m.

2160sq.m.

- structural request: individual house and apartment house have their own kitchen and toilet / shower. Dormitory has not kitchen, has common toilet/shower.

Dining/kitchen - floor area : Dining 70 sq.m.
 Kitchen 30 sq.m.

 100 sq.m.

- structural request : natural ventilation for kitchen w / canteen

Guest House - Floor area : room 20 sq.m. x 5 rooms = 100 sq.m.
 common and adm. space = 200 sq.m.

 300 sq.m.

Hospital - bed capacity : 100 beds (see hospital facilities)
 - floor area : 20sq.m./bed x 100 = 2000 sq.m.

Store House - floor area : Emergency food stock
 150 ton x 1.5 sq.m./ton ; 2m x 1.3
 = 150 sq.m.
 Administrative stock 50 sq.m.
 Fuel stock 50 sq.m.

 250 sq.m.

Workshop - floor area : 50 sq.m.
 - facilities : repair for vehicles electrical and sanitary facilities, machines. wood working.

Power house - floor area : 50 sq.m.
 - structural request: natural ventilation

Garage	- capacity	: 10 vehicles
	- floor area	: 35sq.m./vehicle x 10 = 350 sq.m.
	- structure request:	no wall
Guard Post	- floor area	: 4 sq.m./unit
	- height	: 4 m.

4. Construction Materials

Construction materials are to be selected considering the following:

1. Climate and nature RPC
2. Purpose and duration of facilities
3. Urgency of construction and completion of RPC
4. Transportation facilities available, availability of sources of various materials required from nearby islands.

In view of the foregoing, it is considered suitable to provide asbestos roofing and glass window or louver for housing.

For additional facilities such as store house, galvanized iron sheet roof and wooden window are considered adequate.

Housing should be classified into four ranks.

Rank 1 : House for staff, dining, guest house, hospital

Rank 2 : office

Rank 3 : Community Centre

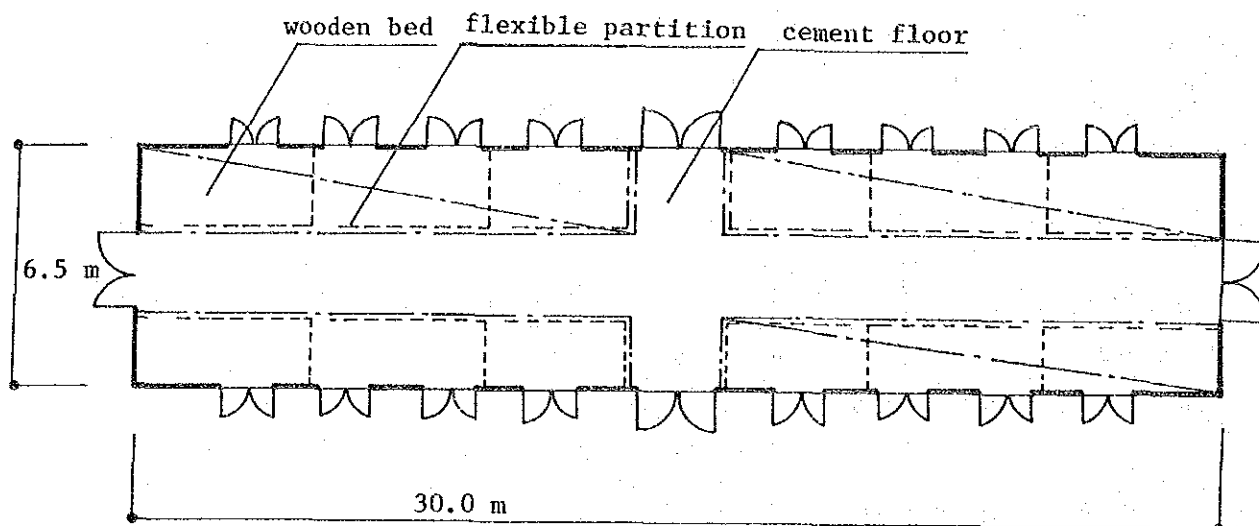
Rank 4 : Dormitory for refugees

For additional facilities, construction material should be selected according to purpose for utilization (see "list of construction material of Housing").

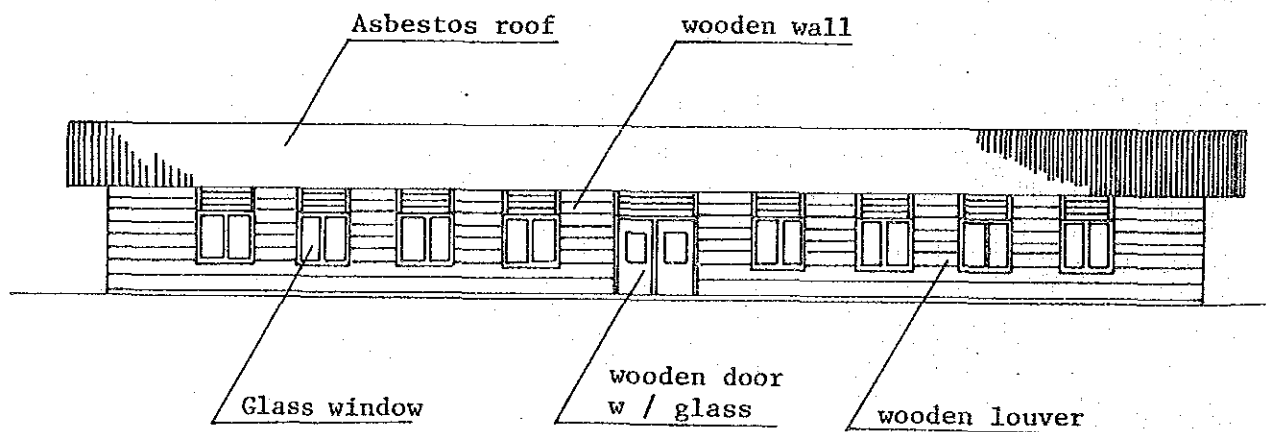
List of Construction Material of Housing

Items	floor	structure	outside wall	door and window	roof	interior partition	ceiling							
House for Staff	tile	wood	wood	hardboard door glass louver (movable)	asbestos	plywood	plywood							
Dining Kitchen														
Gest House														
Church														
Hospital														
Office														
Community Centre								wooden door Glass window						
Dormitory								wooden louver	bamboo panel or curtain (flexible)					
Toilet /shower								cement		G.I.sheet w/paint)	wooden door wire mesh louver		G.I.sheet w/paint	
Kitchen /wash														
Garage	-	-												
Store House	wood		wooden door wooden window, wire mesh louver	G.I.sheet (w/paint)										
Work shop							wooden door wooden window wooden louver							
Power house														
Guard Post	wood													

E Model Plan of Dormitory for Refugee



PLAN s = 1 : 200



ELEVATION S = 1 : 200

IV. Water Resources & Sanitation

1. Water Source

The basic factors involved in reviewing water sources are whether or not quantity available is sufficient and quality good. Following field reconnaissance and analysis, mission concluded that Kali Gong (Gong River) is no doubt the most suitable water source for RPC.

Followings are mission's assessment on water source on Galang Island.

(1) River Water

There exist many rivers on Galang Island; the Island may be divided into about 13 river basins. Among them, the biggest river, Kali Gong in particular was investigated with care by both GRI and mission, whereas most of other rivers are relatively small and it was found not possible to obtain water for use of RPC.

Water flow of Kali Gong was gauged by GRI *1/ showing about 20 l/sec at a site in Gambil, during April and May 1979 which is the beginning of dry season. The site is just down at a place where all tributaries reach main stream.

Year-round data of the water flow was not available. Water flow, however, during the months of April/May is reported to be almost close to that of driest season according to inhabitants of the Island who have been living there for more than 10 - 15 years.

Catchment area of Kali Gong is about 4.3 km² at the proposed intake site, and annual rainfall is reportedly about 2,599 mm. Annual average flow of Kali Gong is calculated at 177 l/sec; provided that 50 % of total rainfall runs off.

Provided that a half or one third of the flow of Kali Gong, being 20 l/sec in dry season, the amount of water, e.g. 7 - 10 l/sec is secured, it would be sufficient for 10,000 people of the RPC.

(Note) *1/ The investigation was carried out by P.T. Karya Titan, a contracting company in Jakarta, employed by GRI.

In addition to the water flow quantity, water quality of the river was tested for checking by both of GRI *1/ and the Mission. The water quality is found to be suitable for human use with a provision of certain adequate treatments (see Water Quality Analysis).

In view of the foregoing, it is proposed that water source for the RPC be taken from Kali Gong. The distance between the proposed intake site and the RPC is about 2 km.

(2) Non-Posibility of Groundwater

Posibility of utilizing groundwater resources was investigated on three sites by GRI *1/ during April/May 1979. It was, however, not successful even with digging of tube-wells up to about 20 m depth at all sites.

Inhabitants of the island, approximately 240 in its total population, presently take water for living use from shallow wells installed near seashore; their water level is about 1.5 m below ground surface. However, both quantity and quality of the water found to be not suitable for use of RPC (see Water Quality Analysis).

Mission, therefore, concluded that there is no potential groundwater available on the Island for use of RPC.

2. Water Requirement

(1) For Living Use

It is considered that water use for living in RPC would be 50 l/day/capita in average. The water use is broken down as follows.

<u>Estimated Water Use per Capita per Day</u>	
Drinking and cooking	5 - 8 liter/day
Bathing	20 - 25 "
Washing	10 - 15 "
Cleaning	1 - 3 "
Toilet	4 - 9 "
Total	40 - 60 liter/day
Average	<u>50 liter/day</u>

The average figure of 50 l/day/capita is considered to be a reasonable per capita consumption, considering natural conditions of the Island.

Note : For reference, some standard figures of per capita consumption are described below:

- a) In Indonesia it is traditionally reported that 1 liter/sec of water is considered sufficient to maintain about 1,000 persons' living. It means that per capita consumption is 86.4 liters/day.
- b) Indonesian military reportedly has standard figures for per capita consumption.
 - 20 liter/day for battling field
 - 60 " for back-supporting area
 - 150 - 200 liter/day for home-base
- c) The planning of urban water supply program included in Indonesian REPELITA III proposes 60 liter/day/capita for rural area.

Total water quantity for living use is calculated at :
 50 liter/day x 10,000 persons = 500 m³/day

(2) For Administrative Use

Water use for administrative facilities and personnel is estimated at :
 50 m³/day (5 m³/site x 10 sites) : equivalent to about 10 % of total water use of RPC.

(3) Total Water Requirement

- For living use	500 m ³ /day
- For administrative use	50 "
Total	550 m ³ /day

(4) Intake Quantity

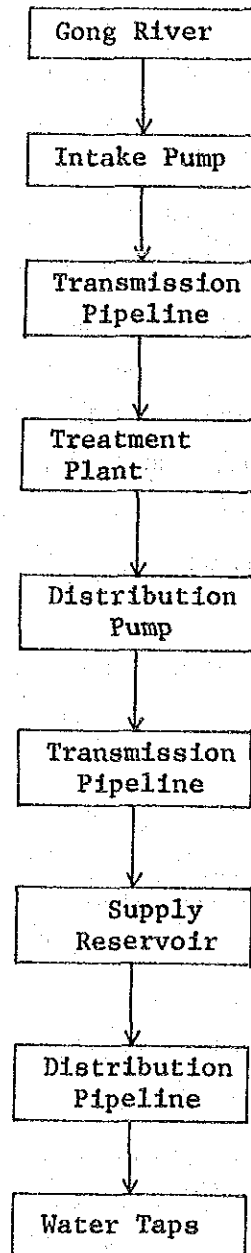
550 m³/day x 110 % = 605 m³/day, say 600 m³/day
 (= 6.94 liter/sec)

From intake site to water use sites, some water losses are expected. They will occur in treatment process as operating loss and piping system as leakage or waste water. The total loss of the water is estimated at 10 % of total quantity; this quantity shall be included in intake quantity.

3. Flow Chart of Water Supply System

Proposed water supply system for RPC, from water source to water taps for consuming, is indicated in the following chart. Major item are described in following pages.

Chart of Water Supply System



4. Water Intake

Water intake site is proposed to be located at Gambil on Gong River. To ensure water quantity for intake, a small dam principally made of earth is proposed to be constructed in the river at the intake site.

At the dam site, intake chamber will be constructed. Raw water is taken from the intake chamber by intake pump located at the site. Then the raw water is to be transmitted by pressure to treatment plant which is to be located on the foot of a hill close to RPC.

5. Transmission Pipeline

Total length of the transmission pipeline from intake site to treatment plant would be about 2,000 m, with a diameter of 150 mm.

For pipe material, rigid polyvinyl chloride (PVC) pipe for water supply use is recommended.

The pipeline shall be installed under a road which is to be made to link intake site with RPC.

6. Water Treatment

Judging from water quality and field reconnaissance, the Kali Gong water is proposed to be treated by rapid sand filtration method, to remove small particles which are contained in the river water and indicated as turbidity; the turbidity would become high after rainfall.

After filtration, the water shall be finally sterilized by chlorine chemicals. The sterilization shall not be exempted at any time during the operation.

The rapid sand filtration method is commonly used to treat river water in Indonesia as well as in other countries. The method consists of processes such as coagulation, flocculation, sedimentation and filtration.

Chemicals to be used for treatment would be aluminum sulphate, soda ash and lime; for sterilization hypochlorite, or Kaporit, may be proposed.

For installation of treatment facilities, a compact treatment unit of package type is proposed. The unit includes coagulation/flocculation tank, sedimentation tank, sand filter, backwash pump, backwash water tank, chemical feeding pump and other accessories; all of them are compacted in the unit for convenience of transportation and operation.

7. Water Distribution

The water is to be supplied from a supply reservoir by gravity flow through distribution pipes and water taps.

Water is finished with sterilization after filtration in the water treatment plant. The water is pumped upto supply reservoir for storage. The supply reservoir made of reinforced concrete, with capacity of about 200 m³, is proposed to be constructed on a hill which is located in the vicinity of the RPC's western site. The height of the reservoir is to be about 20 m higher than that of the highest ground of the RPC site. From the reservoir, water is supplied by gravity to RPC through distribution pipelines. The material of distribution pipeline is proposed to be rigid PVC pipe as well as transmission pipelines. The distribution pipelines shall have stop valves and other accessories in places.

8. Water Quality Analysis

Water quality was tested on some important items by the Mission within the site on three locations, by means of portable test kit: HACH chemical company's kit (DR type) for chemical items and Millipore membrane filters for bacteriological items. Following are the test results and some comments on the water quality.

(For reference, another analysis of Gong river water carried out by GRI is shown in the following page)

Location	Ganbil (Site III)	between Simpangtiga and Sinyantung (Site I)	Sinyantung (Seaside)
Taken from	Gong river	River	Existing shallow well (Ground water)
Use	Proposed water source for RPC	Proposed water source for another refugees camp	Presently used by inhabitants
Dimension of river/ well	3.1 m wide 0.3 m deep	2.2 m wide 0.4 m deep (velocity : very small)	Rectangular 0.7 x 0.9 m (water level: 1.5 m under ground)

Estimated flow rate	17 liter/sec	8.2 liter/sec	
Date and time	June 23, 1979 10:00 a.m.	June 23, 1979 1:50 p.m.	June 24, 1979 8:30 a.m.
Weather of the day	Very fine (small rainfall in short time)	Very fine (small rainfall in short time)	Fine
Atmosphere temperature	28.0°C	27.7°C	28.7°C
Water temperature	25.3°C	25.8°C	28.0°C
pH	6.2	6.2	6.3
Turbidity	6 JTU	12 JTU	40 JTU
Ammonia nitrogen (NH ₃ N)	0.4 ppm	0.1 ppm	0.65 ppm
Iron (Fe)	0.4 ppm	0.9 ppm	1.3 ppm
Manganese (Mn)			Negative
Total bacteria	240/ml	140/ml	More than 500/ml
Coli form group	Negative (-)	Negative (-)	Positive (+)
	Gong river (Site III)	River (Site I)	Shallow well (Seaside)
Judgement	Acceptable to water source		Not recommended
Treatment method to be applied for drinking water	Rapid sand filtration plus sterilization by chlorine chemical		
Comments	<ul style="list-style-type: none"> - pH ranges in lower value this can be corrected by feeding of lime, or soda ash. - Turbidity is not so high in this season however, it will increase at rainfall time; it can be removed by sand filtration. - The water contains iron; it can be reduced by rapid sand filtration plus chlorination to some extent. - Bacteria including coli form group can be killed with chlorination. 		



PENERintah DAERAH KHUSUS IBUKOTA JAKARTA
PERUSAHAAN AIR MINUM JAYA

Jalan Penglarangan II - Pelampungan

Telp. : 582236.



No. Lab. 24/154/Lab/1/79.

JAKARTA, 4 Juni 1979.....

Lampiran :

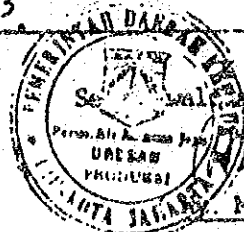
Prihal : Pemeriksaan air.

Kepada,
 Yth: PT. KAWA TAPAN
Jl. Selamat Riadi. No. 7.
Jakarta.

Hasil pemeriksaan Contoh air : ... Kela.....
 Lokasi : ... Pulo Galang, Tanjung Priok.
 Pengambilan dilakukan oleh : ... Regririp. Goutph.....
 Contoh air tab. kend. selama tgl. : ... 31. Mei. 1979.....

Fisika :	Hasil analisa	Standart		
		Maximum Toleransi	Maximum yang dibolehkan	
1. Warna	: 0-5	5	50	ppm Pt. Co
2. Turbidity	: :	5	25	NTU.
3. Bau	: tak berbau	-	-	
4. Rasa	: tak berasa	-	-	
5. D H L	: :	-	-	microcos.
Kimia :				
6. pH	: 5,8	6,5	9,2	
7. Zat padat	: :	500	1.500	ppm.
8. Zat Organik	: 4,74	-	10	ppm. (KMin 04).
9. Carbon Dioksida bebas	: 30,80	-	0,1	ppm. CO ₂ .
10. Alkalinity:				
a. P. Alkalinity	: 0,0	-	-	ppm. Ca. CO ₃ .
b. M. Alkalinity	: 42,0	-	-	ppm. Ca. CO ₃ .
c. Carbonat	: 0,0	-	-	ppm. Ca. CO ₃ .
d. Hydroksida	: 0,0	-	-	ppm. Ca. CO ₃ .
e. Bicarbonat	: 42,0	-	-	ppm. Ca. CO ₃ .
11. Total Hardness	: 0,0	5	10	ppm.
a. Calcium hardness	: 0,0	75	200	ppm. Ca. ++
b. Magnesium hardness	: 0,0	30	150	ppm. Mg. ++
12. Besi	: 0,33	0,1	1,0	ppm. Fe. ++
13. Mangan	: negatif	0,05	0,5	ppm. Mn
14. Sulfat	: negatif	200	400	ppm. SO ₄ .
15. Phosphate	: negatif	-	-	ppm. PO ₄ .
16. Amonium	: trace	-	0,0	ppm. NH ₄ .
17. Nitrit	: negatif	-	0,0	ppm. NO ₂ .
18. D.O	: :	-	-	ppm. O ₂ .
19. Silica	: :	-	-	ppm. SiO ₂ .
20. Chlorida	: 10,65	200	600	ppm. Cl.
21. Sisa Chlor	: 0,0	-	-	ppm. Cl. 2.
22.				
23.				
24.				

Keterangan : secara fisika/kimia contoh air tersebut sebelum diminum diinjeksi dengan penambahan kapur 25 gr/M³



..... Kepala,
, Inspektur & Laboratorium. IAW Jaya.

.....
, Moelyur !)

9. Rain Water Drainage

Rain water will flow into open ditch attached to the road. Then the water is to flow down to river located in/near the RPC site.

10. Night Soil Disposal

The night soil is proposed to be washed out by water to septic tank where the night soil is to be treated with anaerobic bacteris. Finally the water overflowed from the septic tank after treatment, will flow into covered ditch leading into river.

11. Drainage of Water from Kitchen/Bath Room

Water coming from kitchen, bath room and washing rooms flows into covered ditch directly, which leads water to the river.

12. Solid Waste Disposal

Solid waste including garbage will be collected at a place for disposal; the place is proposed to be provided in each group of housing. The solid waste shall be thereby incinerated/compacted/sterilized at regular intervals.

13. Environmental Protection

The environment of the site shall be well maintained from viewpoint of public health and sanitation.

- The catchment area of upstream of the Gong River, proposed water source, be kept free from human residents in order to prevent possible pollution of the river. (Presently the area has no inhabitants).
- All rivers within or adjacent to RPC shall be made off-limit, by way of fencing or equivalent. Rivers to which all drained water to flow into shall be sterilized and cleaned up at regular intervals.
- Places for solid waste shall be well maintained and sterilized at times.

V. Energy Supply

Electric supply is proposed to be made available to RPC and to this endsupply of 8 W/person is considered acceptable. Power generator required would be :

- 1). General service,
50 KW generator : 3 sets (1 set standby)
- 2). Emergency service,
15 KW generator : 1 set (for hospital use)
- 3). Energy for water supply,
20 KW generator : 2 sets (1 set standby)

VI. Transportation Facilities

The transportation facilities point for the RPC will be Tanjung Pinang. There is a weekly freighter service from Jakarta and from Belawan (port of Medan) to Tanjung Pinang. Docks at Tanjung Pinang Harbour can take ships up to 300 tons. However, larger freighters are unloaded in the harbour, a process which can be followed in the future for rapid transshipment of goods to Galang Island. It is proposed to build a jetty at the northwest end of Galang Island. This jetty will be able to take ships up to 200 tons (see also Japanese report, p. 14). Chartering of ships on a regular basis from Tanjung Pinang to Galang Island can be handled through INSA (Indonesian Shippers' Association). Charter ships can be used for the transport of refugees as well as of goods.

Singapore will be the transit point for movement to the RPC and from there to the resettlement countries. It is proposed to charter ferries currently used for the Tanjung Pinang - Singapore v.v. run for the transport of persons directly to and from Galang Island to Singapore v.v. The arrival point at Singapore is the Finger Pier Building where immigration authorities process the refugees for transit to the airport.

International personnel can reach Tanjung Pinang by ferry from Singapore (2 hours) or by air from Jakarta (3 hours). Provision has been made for the purchase of 2 speedboats to ensure a regular service (one run takes 1 hour 15 minutes) from Tanjung Pinang to Galang v.v. for UNHCR, voluntary agency, immigration and Indonesian government officials (see Japanese report, p. 43).

All this traffic may be somewhat difficult but not impossible during the monsoon period.

Calculations of transportation cost to and from the RPC may be found in annex 9.

VII. Telecommunications

A two-way radio system (Short Single Band, SSB) will be established to link the RPC on Galang Island with the UNHCR sub-BO in Tanjung Pinang. Onward communications to Jakarta, Singapore etc. will be made by telegraph and long-distance telephone on a routine basis. Emergency communications can be established with the use of the Department of Defense radio system linking Tanjung Pinang Naval Base with Jakarta.

Cost : 2 SSB's x US\$8,538

U.S.\$ 17,076*

The salaries of the 2 radio operators are included in the administrative budget (annex 10).

* This amount replaces the one included in the Japanese report, p. 43.

VIII. Public Health and Social Welfare

1. General Condition

Health facilities including preventive health care, routine and emergency care as well as for medical examinations are considered necessary.

2. Medical Care System

The basic idea of medical care system is comprised three stages : Primary care, Secondary care and Tertiary care.

For primary care, dispensary unit will be constructed at each community center, to enable patients themselves or their families can receive medicines and treatments for light care. One intern and one pharmacist may be on duty at any time at each dispensary.

For secondary care, one hospital will be constructed in the center of RPC not only for 10,000 refugees in RPC but also for 10,000 refugees in the national refugee camps. The distance between hospital and the end of RPC is less than 500 m, and therefore refugees can easily avail of hospital services. However, refugees in the national refugee camp which is about 3 km away from RPC would require a certain transportation. Hospital should be staffed and equipped to undertake preventive health care, routine and emergency care, medical examination, delivery, minor operation etc. However, major operation or more skillful treatment will not be available at RPC since those would require special doctors, technician and sophisticated medical equipments.

For tertiary care, hospitals in Tanjung Pinang or other cities should be availed of by patients who need serious cares. They can easily reach Tanjung Pinang in about 2 hours by boat.

3. Necessary Medical Services of the Hospital

I. Preventive Health Care

- * Health education
- * Environmental sanitation
- * Control of communicable disease
- * Vaccination

II. Medical Examination

- * X-ray facilities
- * Limited laboratory for blood, urine, stool etc.

III. Patient Treatment

- * General clinic (including EENT, dermatology)
- * Dental clinic
- * Emergency care
- * Minor operation
- * Delivery care
- * Limited rehabilitation care

4. Bed Capacity of the Hospital

Bed capacity will be stimated as follows :

- * No. of refugee : 20,000
- * Average No. of in-patient : 3 person/1,000 person, day
- * Average No. of de-livery : 25 person/1,000 person, year
- * Average length of in-patient stay : 7 days
- * Average bed occu-pancy rate : 0.8
- * No. of bed for in-patient : $20,000 \times 3/1,000 \div 0.8 = 75$ beds
- * No. of bed for OB-GYN : $20,000 \times 25/1,000 \times 7/365 \div 0.8 = 13$ beds
- * Total bed capacity : $75 + 13 = 88$ 100 beds

5. Staff

No. of staff required is as follows :

- * Dispensary : one intern x 6 units
one pharmacist x 6 units
- * Hospital : four doctors (including technician, dentist)
four interns
six nurses
twenty-four asst. nurses

IX. Flow Chart for Movement of People, Food and Supplies1. Food

The following foodstuffs and quantities are considered to be essential for each person per day :

1. Rice 400 gr	Rp 80)	
2. Canned meat 40gr	Rp 100)	
3. Edible oil 30 gr	Rp 18)	to be supplied by WFP
4. Sugar 20 gr	Rp 6)	
5. Spices	Rp 68		
6. Milk powder 30 gr	Rp 55		
7. Eggs, 5 every 10 days	Rp 30		
8. Vegetables 100 gr	Rp 120		
9. Fruit	Rp 18		

Rp 495.- = US\$ 0.80

For 10,000 persons for one year this would mean a total of US\$ 2,920,000 including WFP food estimated having a value of \$ 1,195,000. The request for WFP food assistance has been forwarded to Rome and a decision may be expected soon. If the decision would be positive, UNHCR expenditures would be brought back to a total amount of

US\$ 1,725,000

Furthermore special foods for babies, pregnant women and diseased persons will be necessary for an amount of some

US\$ 200,000

It appears that the islands of the Riau Archipelago will not be able to provide all necessary food supplies for the R.P.C. However they can be obtained from Jakarta or from Belawan and Biramdewa on Sumatra. There are regular shipping connexions with Tanjung Pinang from all three places with ships of some 5000 tons. Taking a necessary monthly food supply of 300 tons, an amount of 300 x Rp 20,000 should be added to the food bill

US\$ 120,000

Although the food prices in Singapore are higher than in Indonesia, in emergencies food could be imported from there. There was no opportunity to obtain prices from that city.

Total expenditures for 1 year in connexion with food supplies excluding the anticipated WFP food supplies	US\$ 2,050,000 (rounded off)
---	---------------------------------

2. Medical supplies

Taking an amount of US\$30 per person per year, including medicines, X-ray etc. a total amount will be needed of	US\$ 300,000
--	--------------

3. Miscellaneous supplies

This would include soap, toothpaste and toothbrushes, musquito nets, blankets, utensiles, clothing and shoes for the very poor, teaching materials.

Total costs are estimated at	US\$ 250,000
------------------------------	--------------

Total expenditure for other supplies	US\$ 550,000
--------------------------------------	--------------

4. Cost of Movement of refugees to and from RPC

a. The RPC on Galang Island will have a capacity of 10,000 persons. Estimating that in a calendar year, a maximum of 5,000 of the residents will be able to leave for their respective countries of resettlement and that their places will be filled without delay by other refugees with firm promises for resettlement, that total movement in the first year to and from the RPC will amount to 20,000 persons (of whom 15,000 arrive in Galang and 5,000 leave).

b. In the second and subsequent calendar year(s), again assuming that the outflow will be 5,000 persons, total movement will be limited to 10,000 persons.

c. According to paragraph 3 of the Technical Guidelines, transportation of refugees from first asylum countries to the RPC will be considered as "a first leg of resettlement travel and costs relating thereto will be borne by the resettlement country concerned".

This proposal will be difficult to administer and is doubtless unpopular with the resettlement countries. Therefore, in consultation with the ICEM office in Bangkok, estimates will only be made for the movement of 15,000 persons to Galang in the first year of operation. The ICEM office in Bangkok has referred the matter to ICEM Headquarters in Geneva which proposes to make a comparison between ship and land transportation on a per capita basis from camps in other parts of Southeast Asia. ICEM has promised a detailed estimate of costs for movement to the RPC in a few days. On the other hand, cost of the movement of the refugees from the RPC to the countries of resettlement will have to be borne by the respective governments of those countries.

For the purpose of this report, it is tentatively estimated that the sum needed for the movement of refugees amounts to US \$ 1,000,000

GRAND TOTAL 3,600,000

=====

X. Administration of RPCSalaries and other staff cost for one yearUS DollarsA. General administrative staff

1. Head of centre, expatriate	40,000
2. Deputy to head, expatriate	30,000
3. Social worker, expatriate (woman)	25,000
4. 1 International accountant	25,000
1 Local accountant *	7,200
5. 3 Secretaries/Typists on local contracts @ 400 per month	14,400
6. 10 Clerks on local contracts @ 250 per month	30,000
7. 2 Radio operators @ 400 per month	9,600
8. 15 Drivers and speedboat operators on local contracts @ 250 per month	45,000
9. 4 Mechanics and maintenance personnel on local contracts @ 400 per month	19,200
10. 30 Manual labourers on local contracts @150 per month	60,000
Total	305,400

B. Medical personnel

1. 4 Doctors @ 800 per month	38,400
2. 10 Medical assistants @ 400 per month	48,000
3. 6 Nurses @ 400 per month	28,800
4. 24 Assistant Nurses @ 250 per month	72,000
Total	187,200

Local Indonesian, not local UN contract.

One doctor, namely the head of the hospital, should be of Indonesian nationality whereas all other personnel should be as far as possible Vietnamese refugees (there is also no short supply of Indonesian medical personnel). It appears that the refugee population has a ratio of one doctor per 1000 refugees. All medical personnel should be employed on local Indonesian salary scales (not local UN salary scales) plus a special allowance (because it will not be able to earn any additional income as usual in Indonesia).

C. Educational Staff

Teachers (mainly language, but also some simple vocational training etc) should be engaged, preferably from the refugees.

Salaries (if required) 50,000

D. Office Supplies, Educational Aids, etc.

These are estimated to cost 10,000

GRAND TOTAL 600,000
(rounded off)

It should be noted that staff arrangements (number and kind) should be made in consultation with the yet to be named operational partner. The above mentioned numbers and salaries should therefore be considered as tentative.

From experience in other refugee camps for Vietnamese in S.E. Asia it can be noted that the refugee population is very well able to organize itself by forming an hierarchy of leadership. This leadership is normally able to impose the necessary discipline. Because of this internal organization many tasks in connection f.i. with maintenance of the centre and the distribution of foodstuffs etc. can be undertaken without paid labour.

XI. Budget

The budget is composed of the data contained in the various annexes. It should be noted that the cost of infrastructure included in the Japanese report (p. 42, first section) has been omitted as this is a GOI responsibility.

All figures in US dollars, rounded off:

Capital expenditures (Japanese report, p. 41-44, plus annex 7)	:	7,000,000
Recurrent expenditure for one year (annex 10)	:	600,000
Assistance to refugees for one year (included in flow chart; annex 9)	:	3,600,000
Contingency Reserve	:	1,800,000
<hr/>		
Total	:	13,000,000

Break down of Cost estimate

Capital cost		US\$1,000
Infrastructure	354.8	
Housing and Building	5,136.9	
Construction work	304.3	
Water supply	436.0	
Energy supply equipment	138.0	
Sub total (excluding Infrastructure)	6,015	
Detailed design and supervision	637.5	

I. Capital expenditure

		unit	Quantity	unicost US \$	amount 1,000 \$	remark
Infrastructure	Jetty	set	1		120.0	L=50;w=6m wooden
	Road	sq.m.	36,000	6.4	231.0	L=6km; w=6m with ditch Talford pavement
	Bridge small	sets	7	321	2.2	L=2 w=6 wooden
		sets	2	802	1.6	L=5 w=6 wooden
SUB TOTAL					354.8	
Housing and Building	Refugee housing Dormitory	sq.m.	200 x 200 unit	80	(3,873.1) 3,200.00	with wood- en beds
	Kitchen/wash	sq.m.	75 x 67 unit	70	351.8	
	Toilet/shower	sq.m.	135 x 34 unit	70	321.3	
	Community Centre				(270.0)	
	Meeting/class room	sq.m.	400 x 6 unit	90	216.0	
	Dispensary	sq.m.	50 x 6 unit	90	27.0	
	Shop	sq.m.	50 x 6 unit	90	27.0	
	Administrative Building				(733.8)	
	Office	sq.m.	900	100	90.0	
	House for staff	sq.m.	2160	130	280.0	
	Dining/kitchen	sq.m.	110	130	13.0	
	Guest House	sq.m.	100	130	39.0	
Hospital	sq.m.	2000	130	260.0		

		Unit	Quantity	Unitcost US \$	Amount 1,000 \$	Remark
	Store house	sq.m.	250	70	17.5	
	Work Shop	sq.m.	50	70	3.5	
	Power House	sq.m.	50	70	3.5	
	Garage	sq.m.	350	50	17.5	
	Guard post	unit	6	1.500	9.0	
	Others septic tank	---	---	---	(250.0)	
					5,126.9	
Construction work	Ground levelling	sq.m.	90.000	2.6	238.3	cutting 50.000 sq.m. filling 90.000 sq.m.
	Road in RPC	sq.m.	35.000	1.6	56.0	
	Drainage in RPC	sq.m.	10.000	1.0	10.0	
Sub total					304.3	
Water supply	Water supply	set	1		436.0	
Power supply	Power supply	set	-	-	138.0	Generator 3x50kw 15kw 2x20kw Cable dis- tribution
Telecommunica- tion	Telecommuni- cation	set	2	2,729	5.5	SSB Galang- T.Pinang
Sub total					579.5	
Equipment	-Vehicles				(173.4)	
	Jeep		4	11,236	45.0	
	Truck		4	16,051	64.2	
	Ambulance		1	16,051	64.2	
	-Speed boat		2	3,210	6.4	70 PK

		Unit	Quantity	Unit Cost	Amount	Remarks
	Office facility				250.0	
	Medical equipment				150.0	Including X-Ray
					579.8	
Total capital cost					6,955.3	

II. Running cost

	Vehicles				(23.6)	
	Jeep	set	4	2.616 /year	10.5	
	Truck	set	4	"	10.5	
	Ambulance	set	1	2.616 /year	2.6	
	Speedboat	set	2	5.139 /year	10.3	
	Generator	set			14.8	
	Office use				16.0	
					64.7	

III. Additional cost

Detailed designed supervision :
 10 % of construction cost
 $6,375.5 \times 0.1 = 637.5$

IV. Contingency

20 % of total cost
 $(6,955.3 + 64.7 + 637.5) \times 0.2 =$
 1,531.4

XII. Timetable for the Construction and Operation of the RPC, Galang Island

- Second half of June - early July 1979 :

Feasibility Study undertaken by a Japanese - Indonesian and UNHCR survey team. Approval of report of team by the Government of Indonesia and by the High Commissioner for Refugees.

This will be followed by a detailed study of the designs and the drafting of specifications.

- July 1979 :

Appeal by High Commissioner for funds.

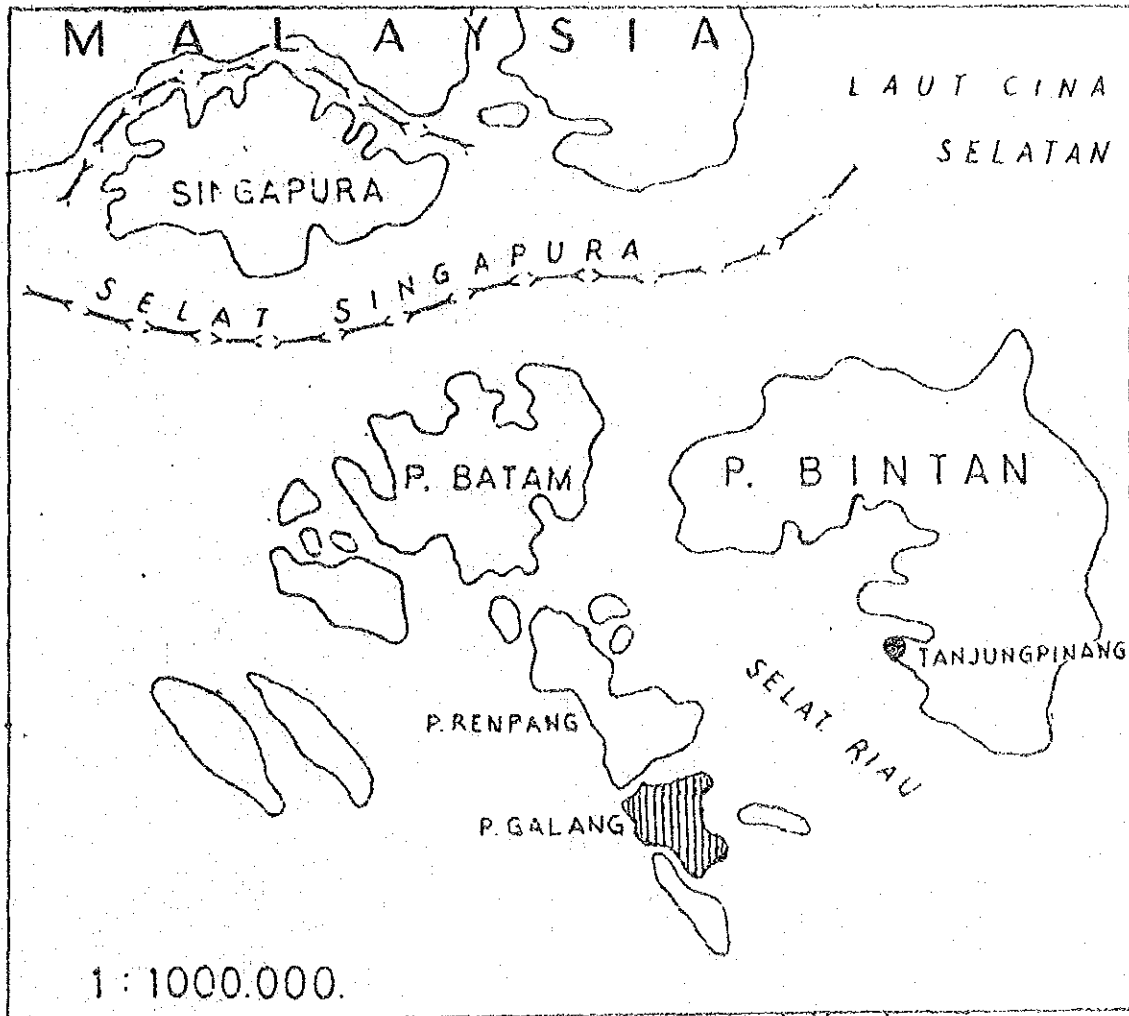
- Second half of August 1979 :

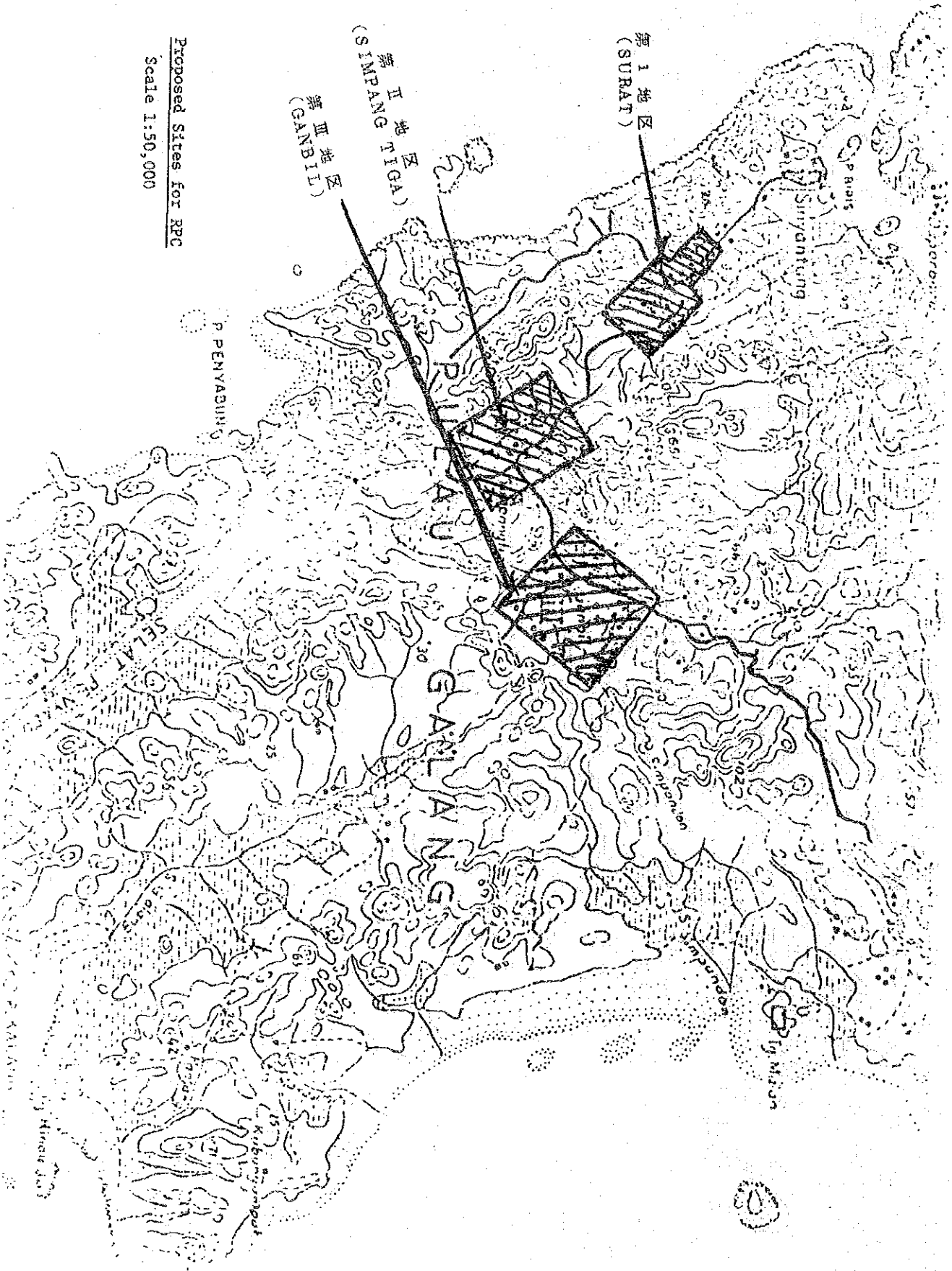
Start of work (subject to satisfactory response by donor governments to appeal of High Commissioner). It is understood however that the work on the infrastructure of Galang will commence July.

- November 1979 :

Inauguration of Center

Location of Galang Island





Proposed Sites for RPC
Scale 1:50,000

VII-2

Report on the Refugee Processing
Center in Philippines

GENERAL LAYOUT OF RPC

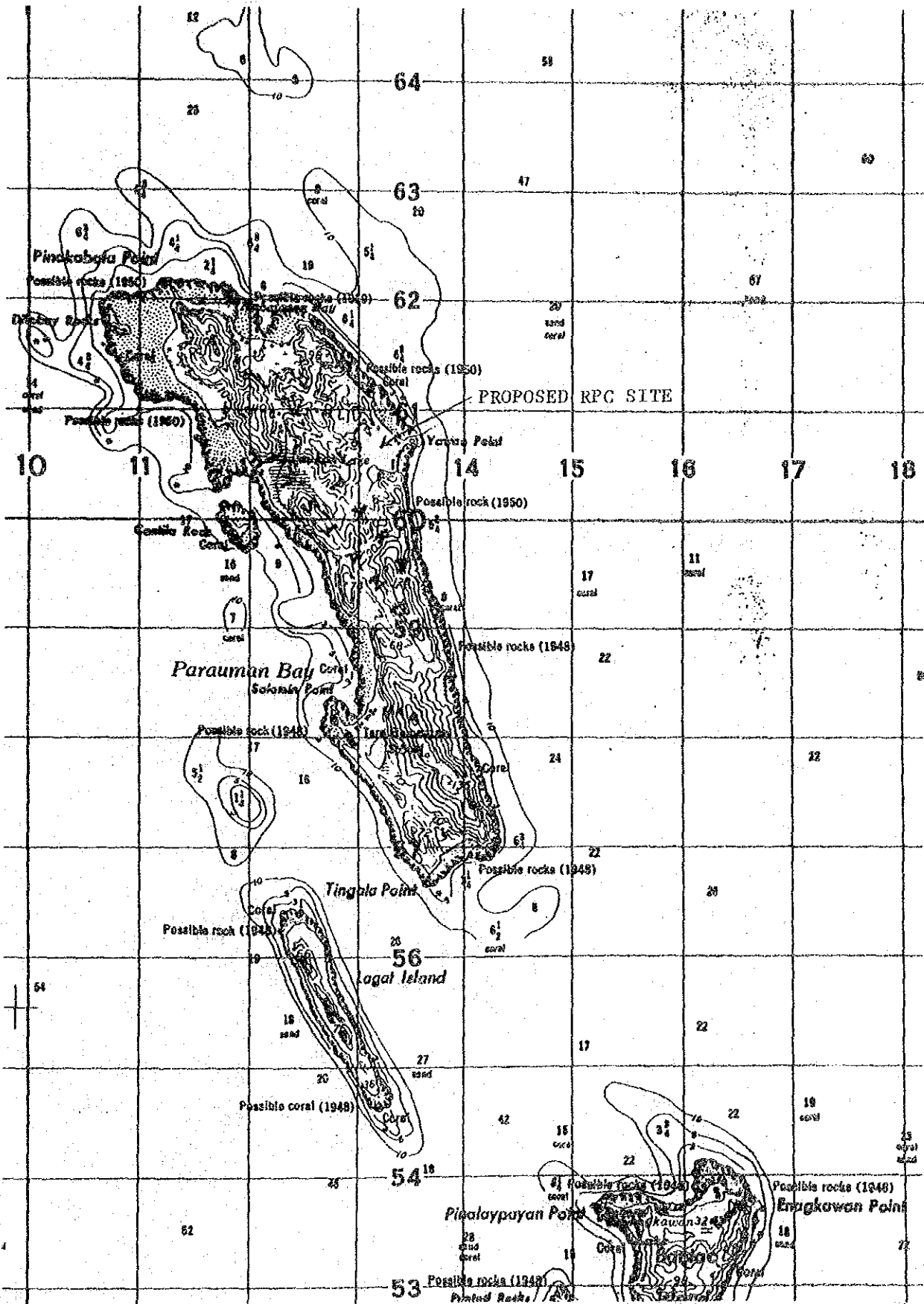
I. Proposed site

In Tara Island, seven possible areas for the establishment of RPC and/or national refugee camp(s), varying in size from 5 to 30 hectares have been identified by a survey conducted by the Philippine Navy. Among these three alternative sites, YAWAO POINT SITE has been selected by the Government of the Philippines as the most suitable site.

Some of the major reasons of selecting Yawao site are:

1. The site has relatively wide and flat area;
2. Only two families of local inhabitants are living nearby the site, while other possible sites with better topographical areas are being inhabited by comparatively more people.
3. The proposed location of the pier along the beach is close to the site, distance of which is only about 500 yards and therefore it is considered most convenient from various aspects particularly from transportation point of view.
4. Water springs are identified within the site and its vicinity spots and shallow wells dug by the Navy show availability of sufficient quantity of water for living purposes, excluding drinking water.

TARA ISLAND



II. The RPC Site (Yawao Site)

The Yawao site is located in the middle part of the east coast of the Island. It has an area of approximately 25 hectares of fiat terrain mostly covered with trees.

Within the site, there are two lagoons accumulating rain water from vicinity area. Water depth in full wet season is reported to be about only one meter and it is completely dried up during the dry season. Southern and northern lagoon has its water area of approximately 4.4 hectares and 0.9 hectares respectively during rainy season, including swampy areas.

Water of the lagoons are rather salty because of back flow of sea water during dry season with high tide.

There exists an abandoned air strip with approximate length of 400 meters with no paved runaway and aviation facilities.

Area adjacent to the site to the west is hilly with gentle and steep slopes combined; some gentle part of the hills are paddy fields cultivated by the inhabitants.

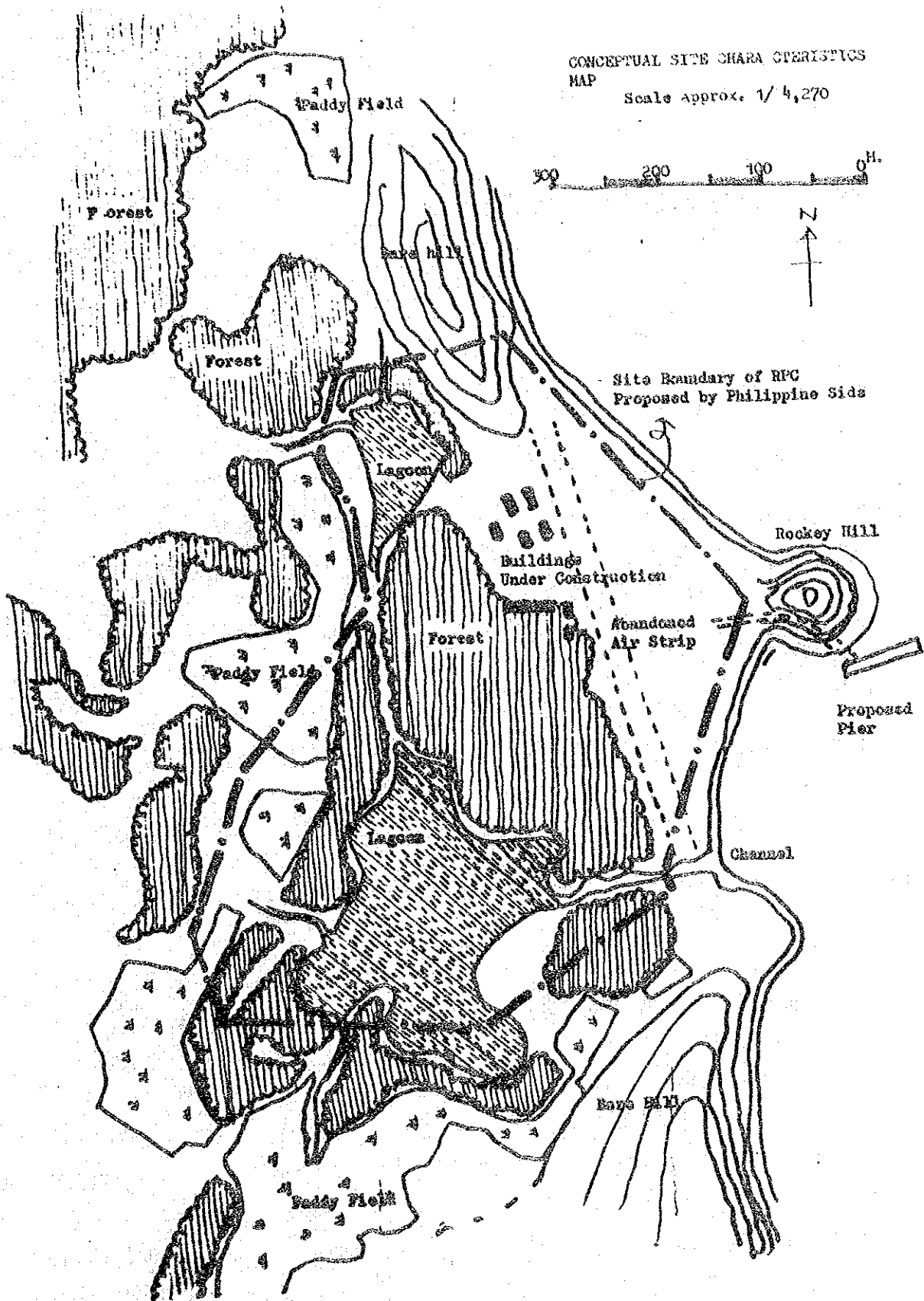
For purposes of facilitating construction of refugee camp, two families of the local inhabitants have already been relocated to the southern part of the Island by the government. To date, four administration buildings, presently used as construction workers' accomodation are almost completed, and one refugee barrack annexed with toilet/shower and kitchen facilities are under construction. Building materials for several ware barracks are already available in the site.

The construction works are conducted by a Naval Force and Mission has been informed that these facilities are for the purpose of temporary accomodation of approximately 1,000 people of "Tung An" during this typhoon season. These facilities are scheduled to be converted to RPC when the national refugee camp or camps are constructed in other alternative sites.

Attached in the subsequent pages are an aero-photography of the site and its vicinity, and a chart showing findings of the Mission during site visit.

CONCEPTUAL SITE CHARACTERISTICS
MAP

Scale Approx. 1/4,270



III. Population Density Standard and Land Requirement for RPC

Further to careful analysis on RPC's operation and facilities, also on people's living environmental requirements, etc., the Mission found that an optimum gross population density of RPC would be 300 persons per hectare.

In each particular RPC case, this standard would, of course, differ according to respective site conditions such as drainage condition, topographical condition, etc. However, these disparity will be somewhat within about 20 per cent.

In Tara RPC case, land requirement are computed as follows: To accommodate 5,000 refugees in RPC, taking net population density of residential building group as 500 persons per hectare, a 10 hectare of land is required.

In addition, 3 hectares of land for administrative facilities, and 20 per cent of total area for open space, road, drainage and other use are considered necessary, and it is therefore computed as approximately 16.3 hectares of land is required on which actual buildings and other facilities are to be layed out.

Keeping in view this figure as site area, a gross population density is given as 300 persons per hectare which meet a standard as indicated.

IV. General Layout Principles

As set out below, some of the basic principles in preparing physical layout plan are:

1. Maximum use of existing land characteristics and topographic advantages be taken into account, with a view to minimizing cost for earth moving works and to minimize time for site preparation works. Particularly, drainage conditions be carefully treated so as to ensure good sanitary conditions with least cost.
2. Various facilities required be constructed in such a manner to ensure most efficient and effective operation of RPC.

A well systematized grouping system of the people and of the buildings and other related facilities as well would set forth the basic guidelines to ensure the smooth management of RPC.

V. Some comments on site characteristics in connection with layout plan

Following description are some findings of the Mission on land characteristics of the proposed RPC site in connection with site la-out plan, for which the Mission found that further study and additional survey are to be undertaken for preparation of the final layout plan and detail design therefor.

1. Existing Lagoons

Existing lagoons are one of the major drainage system of the site. All the rain water from the site and vicinity areas are collected to the lagoon and discharged to the sea through a natural channel which lies at the southern end of the site.

A plan to reclaim the lagoon totally and utilize as RPC facility site would necessitate a considerable amount of earth works and also complete new drainage system is to be provided. It is, therefore, recommended that a reclamation work be minimized to the extent possible.

A sanitary condition of the lagoons, particularly in dry season, is expected to become critical because of accumulated outflow from septic tank or other used water to the lagoons. Some measurements should be considered to maintain satisfactory level of sanitary condition of the lagoon including periodical inspection programme, chemical treatment and limitation of use of lagoon water by the people.

2. Site Area

Proposed site has 24 hectares of area which contains the area of the lagoons, drainage channel and air strip which cannot be used as RPC facility area. If these areas are to be excluded from RPC building purposes, net usable land available for various facilities will only be less than 10 hectares which is substantially less than the required land set forth for RPC.

Expansion of the site area to the adjacent hilly area would have to be taken into consideration.

Surrounding paddy field appears to be the possible expansion area; however, taking locational disadvantage of the Tara Island regarding fresh vegetable supply, these paddy fields could be the source of fresh vegetables and other food crops to be cultivated by refugees themselves and, therefore, it may be considered preferable to retain the fields for

such purposes.

This calls for further detailed study regarding possibility of the expansion of the RPC site to the hilly area. The study results would affect to a greater extent total construction cost and RPC's density standards.

3. Air Strip

In case existing air strip has to be improved for aviatational use, minimum aviation design criteria be considered and a plan therefor be prepared. In this case, a considerable area have to be set aside for purposes of aviatational facilities. To minimize land requirement for avlation operation, use of helicopter and its feasibility should be studied.

4. Detailed topographical and soil survey

Detailed topographical survey and geological survey are considered essential to provide basic data and information for preparing an RPC master plan and detailed design.

Metheological data of the site or of an equivalent value have to be collected and analyzed. Also, hydrological information of the lagoons and drainages should be collected.

BASIC INFRASTRUCTURE

Pier at Yawao Point.

Yawao Point has a sandy shore and surrounded with a coral reef extending gradually to about 75 yards (69 meters) from the shore, then abruptly change gradient from 1 fathom to 3 fathoms in distance of 100 yards (91 meters). Current velocity is 2 knots and moves in northeastern direction.

Judging from the offhand hydrographical survey as such, jetty location should be considered more than 100 meters off-shore to allow approach by even small size ships and boats.

Proposed approach road to pier, running on the rocky steep hill, does not appear feasible and it is recommended that an alternative design should be prepared for the access road itself.

Following are some major items to be reviewed and analyzed in designing

pier and access road:

Pier/Jetty

1. Seawater depth around the bay
2. Soil condition of the sea bottom
3. Estimated tonnage of the boat
4. Size of pier/jetty
5. Kinds of structure (material)
6. Location of pier/jetty
7. Transportation system

Access Road

1. Road design standard
2. Road length

CONSTRUCTION OF RPC

1. Kinds of RPC Facilities

Proposed RPC facilities would be classified into three categories in relation to the grouping structure of the people. These are : i) dwelling cluster units, ii) community group facilities, and iii) central administrative facilities.

1) Dwelling cluster units to accomodate approximately 300 people:

- dormitories
- communal kitchens
- communal toilet/shower
- wash spaces
- septic tank
- court yard

ii) Community group facilities for approximately 2,000 people:

- meeting/classrooms
- dispensary
- open field
- waste collection/incineration pit

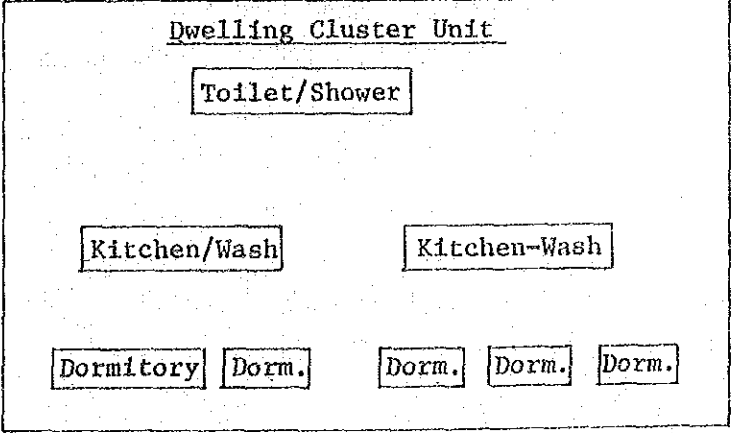
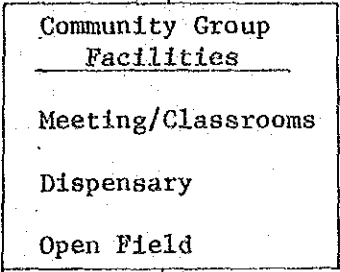
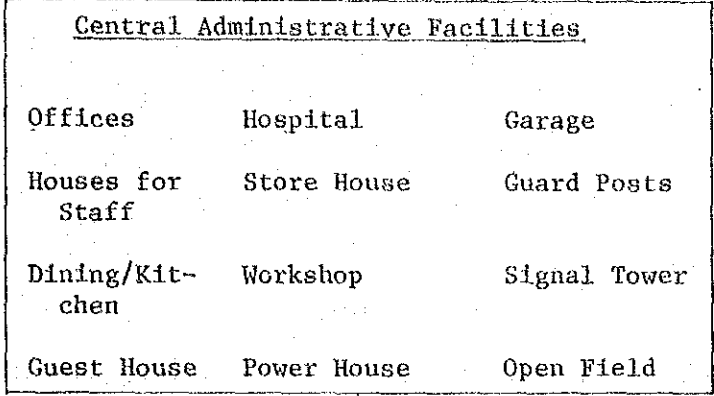
iii) Central Administrative facilities:

- administrative/security offices
- houses for staff
- dining/kitchen (for staff)

- guest house
- hospital
- store house
- maintenance workshop
- power house
- garage
- guard posts
- signal tower
- open recreation field

These facility groups will be constructed in hierarchial manner, taking into consideration physical layout prepared based on specific features of the site.

Conceptual grouping structures is illustrated as follows:



2. Design Criteria

Dormitory: 3-4 m² of floor area will be considered adequate per person.

Natural ventilation and lighting are required. Movable partitions like bamboo panels are to be provided for purpose of family privacy.

Kitchen: Kitchen space will be provided for 1-2 shifts per meal cooking time.

Natural ventilation is required.

Toilet/Shower: One booth per 10-15 refugees will be necessary. Water proof wall is required for shower booth. Natural ventilation is required.

Washing: Cement floor and wash basin will be necessary nearby shallow wells.

Meeting/Class-room: Several types of floor area will be necessary for meeting rooms, classrooms or library.

Office: 4-6 m² of floor area will be necessary per staff. Several partitions will be necessary.

Office will be separated into 2-3 units like as administrative office and security office.

House for Staff: Several types of houses will be necessary as following:

- administrator's house
- assistant administrator's house
- apartment house for married staff
- dormitory for single staff

Individual houses and apartment houses will have their own kitchen and toilet/shower rooms.

Guest House: 3-5 rooms will be necessary.

Hospital: 20-25 beds capacity will be necessary.
20-25 m² of floor area will be necessary per bed.

Store House: Emergency food stock, administrative miscellaneous stock, fuel stock, etc. will be necessary.

Workshop: Maintenance and repair parts for vehicles, electrical and sanitary facilities, machine will be provided and simple sawmilling may be necessary.

Power House: Natural ventilation is required.

3. Construction Materials

Construction materials are to be selected considering the following:

1. climate and nature of RPC
2. purpose and duration of facilities
3. urgency of construction of RPC
4. transportation facilities available, availability of sources of various materials to be made available from other islands.

Construction materials should be classified into four ranks by utilization of house buildings:

Rank 1: House for staff, dining, guest house, hospital

Rank 2: Office

Rank 3: Community group facilities

Rank 4: Dormitory for refugees

For additional facilities, construction materials should be selected according to purpose of utilization.

4. Review on Housing Plan prepared by the Philippines

The Mission has reviewed the housing plan prepared by the Philippines on preliminary basis and found that it is rather well prepared and acceptable in general. However, certain improvements and modifications in the course of preparing detailed design are suggested as set out below:

1. Floor space for housing, particularly the dormitory for refugees, community group facilities and the hospital are considered insufficient.
2. Toilet/shower and kitchen facilities are inadequate.
3. Wash space for refugees, guest house, workshop and garage are to be provided.
4. Privacy within refugee dormitory is to be considered.

5. Lawanit boards for outside walls of offices and for partitions of shower booths are not adequate. Those boards are not strong enough for exposure to the rain, waster and monsoon. Other locally available materials such as woods for outside walls and galvanized iron sheets for partitions would be desirable.

PUBLIC HEALTH

Public Health facilities including preventive health care, routine and emergency care as well as for medical examinations are considered necessary.

The basic idea of medical care system is comprised of three stages: i) primary care, ii) secondary care, and iii) tertiary care.

For primary care, dispensary unit will have to be made available to enable patients themselves or their families to receive medicine and treatments for light care.

For secondary care, one hospital with 20-25 beds will have to be constructed in the center of RPC not only for 5,000 refugees but also for inhabitants of the Island in case of emergency. In terms of number, about 30 staff (including 2 doctors, 5 nurses and 1-2 technicians) are to be provided.

Necessary medical services of the hospital are for the purpose of the following in general:

1. Preventive Health Care
 - Health Education
 - Environmental Sanitation
 - Control of communicable disease
 - Control of Malaria
 - Vaccination
2. Medical Examination
 - X-ray facilities
 - Limited laboratory for blood, urine, stool, etc.
3. Patient Treatment
 - General Clinic
 - Dental Clinic
 - Emergency Care
 - Minor Operation

- Delivery Care
- Limited Rehabilitation Care

Major operation or more skillful treatment will not be available at RPC since those would require special doctors, technicians and sophisticated medical equipment.

For tertiary care, hospitals in Coron Island or in Manila should be availed of by patients requiring emergency and serious cases. Emergency transportation methods for those patients should receive serious attention.

WATER RESOURCES AND SANITATION

1. Water Sources

According to the field reconnaissance of the Mission, accompanied by experts of Philippine Government and inhabitants, it is found that fresh water (unsalty water) is available on the Tara Island in small quantity, particularly in the period of dry season.

There exist three or four streams in the Island which are about 1 km wide and 5 km long. They, however, are relatively small and their down streams are rather swampy and appear to be unsuitable as a drinking water source. Apparently, upper streams are very small; each stream length is less than several hundred meters, and reportedly become dried up in dry season. It is due to small catchment area of each stream, though annual rainfall is reported to be as much as 2,413 mm.

The streams make lakes at their estuaries in wet season; their surface area are approximately 0.5 - 3.0 ha., with depth of about 1-2 meters at the center. The water of these lakes, however, are usually salty and become dried up in dry season. Inhabitants of the Island reportedly obtain salt crystal for their living use from the dried lakes. The lakes, therefore, are definitely not suitable source of water for the RPC.

It is thus concluded not feasible to obtain quantity of water required for RPC from fresh water sources. Currently, inhabitants and workers living in the Island take water from very shallow groundwater which is slightly salty, or from small springs which are scattered at places and are rather turbid, or from rain water directly; although they are

not sufficient in quantity and doubtful in quality.

Accordingly, for RPC, it is proposed that drinking/cooking water be taken from fresh water source and water for miscellaneous use such as bathing, washing, toilet, cleaning, etc. be made available from unfresh water and/or salty sources.

2. Water Requirement for Drinking/Cooking

Water requirement for drinking/cooking purposes is estimated at:

$$(5 - 10 \text{ liter/capita/day}) \times 7,000 \text{ persons} =$$

$$35 - 70 \text{ m}^3/\text{day} = \text{say, } \underline{70 \text{ m}^3/\text{day}}$$

Therefore, approximately $70 \text{ m}^3/\text{day}$ (0.81 liter/sec.) of fresh water be somehow stored.

3. Study Needed

The first task to be carried out as quickly as possible is to secure fresh water for drinking/cooking use. The availability of the above amount of fresh water, $70 \text{ m}^3/\text{day}$, has not yet been confirmed so far throughout a year.

Following studies on availability and/or possibility of fresh water should be executed at sites in details, as per water quantity and water quality.

- a) possibility of construction of artificial reservoir (small earth dam on the stream)
- b) development of natural spring water
- c) drilling test for ground water
- d) storage of rainfall water
- e) transportation of drinkable water from another island by ship
- f) combination of the above methods.

Above, a), b), c) and d) are methods of obtaining fresh water locally within the Tara Island. If fresh water is found not available within the Island, the final solution is:

- e) transportation of drinking water, which is the last resort, and may have to be considered.

NOTE:

Transportation of Drinking Water

This is the final method to be considered for obtaining drinking water, outline of which will be as following:

- The water will have to come from a city located in near island where some excess water is available. The water shall be a treated water and must be drinkable. The water will be well sterilized by chlorine chemicals.
- Water will be transported by the navy tanker several times a week. Water requirement for drinking/cooking will be $70 \text{ m}^3/\text{day}$. Therefore, volume of water to be transported by the tanker at one time will be 140 m^3 , provided it is transported every other day (once every two days).
- Water reached at the jetty in Tara Island will be pumped up to the elevated water tank. Fortunately, the proposed RPC site is located adjacent to the jetty.
- The elevated tank will be constructed at the site. The height of the tank level will be approximately 20 m higher than that of RPC's elevation. The capacity of the tank should be sufficient to store several days requirement. Two tanks are proposed to be constructed and each one be used alternately. Each tank will have capacity of 150 m^3 approximately, which is equivalent to two days' consumption.
- Transmission pipeline from the jetty to the tanks will be installed. Pumping facility and accessories will be equipped with the pipeline.
- Water will be supplied from the elevated tanks by gravity through distribution pipelines and water taps. The residual chlorine shall be checked at times; if it is not sufficient, chlorination shall be added at RPC site or be strengthened at the original site.

4. Water Treatment

Water treatment necessary for drinking water is considered as follows:

- For a) and b): surface water or spring water --- rapid sand filtration plus chlorination

- For c): groundwater ---- Chlorination only may be applied if it is taken from tube-well
- For d): rain water ---- some treatment and chlorination
- For e): transported water ---- Additional chlorination at the site or strengthening of chlorination at a site where water is originally produced

5. Water for Miscellaneous Use

Water for miscellaneous use such as bathing, washing, toilet, cleaning, etc., will be obtained within/near RPC site, by means of shallow wells with manual wing pump, though it is slightly salty. At the site, five shallow wells with manual wing pumps are installed at the site for test; they are located with a distance of about 50 m each. Their yield seems to be rather satisfactory, although detailed technical data (maximum yield, suitable production, influence of a well to the other wells, etc.) are presently not available. These wells require further indepth studies to arrive at reliable conclusions on various issues as cited above. Potentials for development of these wells should also receive careful attention.

Water quantity required for the miscellaneous use is estimated at:

$$(40 - 50 \text{ liter/capita/day}) \times 7,000 \text{ persons} =$$

$$280 - 350 \text{ m}^3/\text{day} = \text{say, } \underline{300 \text{ m}^3/\text{day}}$$

Rainfall catchment area at the site is considered about 0.5 km^2 at least. Preliminary computation, provided 10% of rainfall is considered obtainable from shallow wells, would show that annual average yield of wells will be:

$$0.5 \text{ km}^2 \times 2.413 \text{ m/year} \times 10\% \div 365 \text{ days} = \underline{330 \text{ m}^3/\text{day}}$$

In any event, shallow well water for miscellaneous use should also be the subject of further study.

6. Night Soil Disposal

Night soil is proposed to be washed out by water to septic tank where night soil is to be treated with anaerobic bacteria. Finally, water overflowed from the septic tank after treatment will flow into downstream of the lake river where it is proposed to be used as a space for recreation purposes.

7. Solid Waste Disposal

Solid waste, including garbage will be collected at a place for disposal: the place is proposed to be provided in each group of housing. The solid waste shall be incinerated/compacted/sterilized at regular intervals.

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