

4.2.4 Medical Equipment List

In regard to selecting medical equipment, it is assumed various conditions that are prescribed in 4.1.2 (2) Conditions for Selection of Equipment. New equipment will be selected based on replacement or supplementing of equipment at the project hospitals which has inadequate capability due to deterioration or insufficient number to respond demand, and those equipment will be usable at the standard technical level of staff and will not be higher grade than current use.

The principal equipment which will be procured for the Project are listed in following table.

Department	Item	Kundiawa Hospital	Nonga Hospital	Madang Hospital
General O.P.D. Intermediate O.P.D. Speciality O.P.D.	Examining bed	0	0	0
	Treatment bed	0	0	0
	Instrument trolley	0	0	0
	Examining light Stand	0	0	0
Pediatric O.P.D. MCH	Examining bed	0	0	0
	Treatment bed	0	0	0
	Instrument trolley	0	0	0
	Weighing scale	0	0	0
	Ultrasound Scanner	0	0	0
Emergency O.P.D.	Treatment bed	0	0	0
	Emergency cart	0	0	0
	Patient monitor	0	0	0
	Ventilator	0	0	0
	Recovery bed	0	0	0
Dental O.P.D.	Dental Unit	0	0	0
	Dental treatment instrument	0	0	-
	Dental lab. equipment	0	-	0
Xray Examination	X-ray diagnosis system	0	0	-
	Dark room equipment	0	0	-
Pathology	Centre table	0	0	-
	Glucose meter	0	0	-
	Sputum examining equipment	0	0	-
	Centrifuge	0	0	-
	Water purifier	0	0	-
Blood Bank	Donor bed	0	0	0
	Blood collecting set	0	0	0
	Refrigerator	0	0	0

Table continued

Department	Item	Kundiawa Hospital	Nonga Hospital	Madang Hospital
Operating Theatre	Operating table	0	-	-
	Operating table, mobile	0	-	-
	Shadowless operating light	0	-	-
	Anaesthesia apparatus	0	-	-
	Ventilator	0	-	-
	E.C.G. monitor	0	-	-
	Recovery bed	0	-	-
ICU	Bed side monitor	-	0	0
	Ventilator	-	0	0
	ICU bed	-	0	0
CSSD	High pressure steam sterilizer	0	0	-
	Ultrasonic cleaner	0	0	-
	Drying tank	0	0	-
	Boiling tank	0	0	-
	Instrument cabinet	0	0	-
Dispensary	Drug cabinet	0	0	0
	Medical refrigerator	0	0	0
Mortuary	Autopsy table	0	-	-
	Shadowless light	0	-	-
	Mortuary refrigerator	0	-	-
Administration	Medical file cabinet	0	0	0
Ward	Patient bed	0	-	-
	ECG, machine	0	-	-
	Infant bed	0	-	-
	Delivery bed	0	-	-
	Ultrasound scanner	0	-	-
	Phototherapy unit	0	-	-
	Ultrasonic nebulizer	0	-	-
Workshop	Spare parts shelf	0	-	-
	Spare parts cabinet	0	-	-

4.3. Implementation Plan

4.3.1. Implementation Policy

(1) Implementation System

In the case of implementing of this project under the Grant Aid Cooperation from the Government of Japan, the Government of Papua New Guinea will be the principal responsible for implementation. The consultant providing technical assistance to the Government of Papua New Guinea for implementing the project, the general construction company for the construction of facilities, and trading company responsible for procurement of medical equipment are required to Japanese companies under the terms of the Government of Japan Grant Aid Cooperation system.

The organization that will accept the grant aid cooperation from the Government of Japan will be the Department of Finance and Planning, Office of International Development Assistance which will be responsible for overall coordinating of the project, the organization responsible for implementation will be the Department of Health. The Department of Works will be responsible for technical issues related to facility construction.

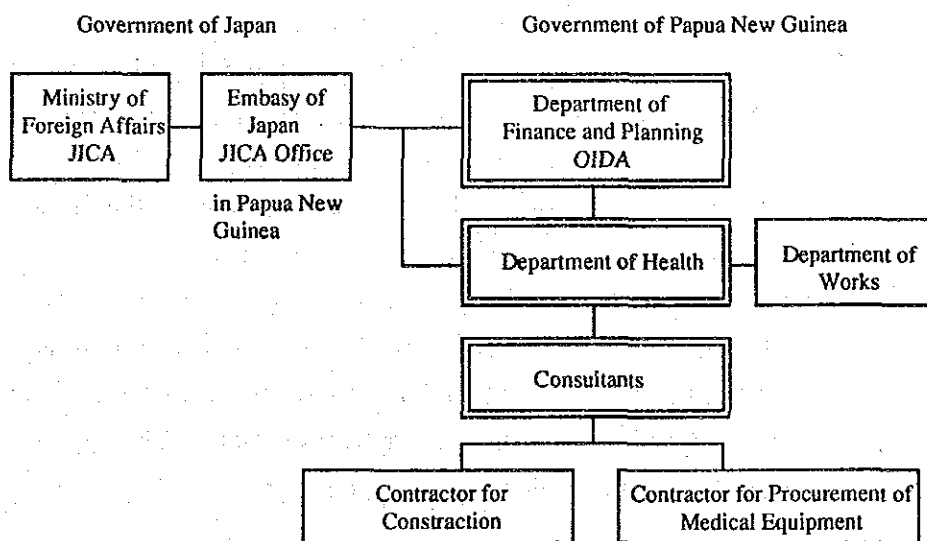


Fig. 4.3-1 Implementation System

(2) Consultant

The design and supervision activities to be conducted by consultant for facility construction and procurement of medical equipment are outlined as follows:

(i) Detail Design

Preparation of design drawings, specifications, procedures and conditions for tender and other papers related to tender.

(ii) Assistance for Tender and Contracting

Providing assistance for each procedure of preparation to tender, tender and contracting.

(iii) Supervision of Execution

Supervision of the execution of facility construction and procurement of medical equipment.

After the both Governments of Papua New Guinea and Japan signed the *Exchange of Notes regarding the Government of Japan's Grant Aid Cooperation* for the implementation of the Project, the consultant recommended by the Government of Japan will quickly arrange to conclude a consulting services contract with the Government of Papua New Guinea. The consultant will be confirmed as the consultant responsible for the implementation of the Project after the consulting contract is verified by the Government of Japan. In Papua New Guinea when application for permit for construction work is submitted, it is required that accompanied structural design drawings and calculations are checked and approved by a structural engineering specialist registered with the Government of Papua New Guinea. Thus the services of a local consultant are indispensable.

(3) Contractor for Execution

The contractors for construction of the facilities and procurement of equipment for the Project will be selected through the following public tender process: Announcement of Tender, Application for Tender, Pre-Qualification of Tenderer, Issuing of Tender Documents, Tender, Assessment of Bids, Selection of Contractors

After selection of contractors, the selected contractors will conclude facility construction contracts and medical equipment procurement contracts with the Government of Papua New Guinea. After these contracts are verified by the Government of Japan, the facility construction contractors and medical equipment contractors for the Project will have been confirmed.

4.3.2. Scope of Undertakings

The scope of the construction work to be borne by the Government of Papua New Guinea and the Government of Japan are as follows:

(1) Kundiawa Provincial Hospital

Item	Papua New Guinea	Japan
(1) Infrastructure		
1. Site development	<ul style="list-style-type: none"> To demolish, remove existing buildings To clear, level the site 	
2. Water supply	<ul style="list-style-type: none"> To lead city water supply pipe into the site 	<ul style="list-style-type: none"> To provide water supply system within the site.
3. Drainage	<ul style="list-style-type: none"> To set up waste water drainage pump system and connect drainage pipe between waste water reservoir tank and street main 	<ul style="list-style-type: none"> To provide drainage and sewage system within the site To provide sewage treatment system
4. Electric power	<ul style="list-style-type: none"> To lead electric power supply line into the transformer substation in the site 	<ul style="list-style-type: none"> To provide electric power distribution system within the site
5. Telephone	<ul style="list-style-type: none"> To lead telephone line to the main terminal panel To bear the charges in connection with the above 2, 3, 4, 5, requested by the authorities concerned 	<ul style="list-style-type: none"> To provide main terminal panel and telephone system within the site
(2) Building	<ul style="list-style-type: none"> To bear expenses and charges required to obtain the building permission 	<ul style="list-style-type: none"> To construct the facilities with required utilities which is described in Article 4.2.3
(3) Outdoor	<ul style="list-style-type: none"> To construct gate and fence To construct guard's house 	<ul style="list-style-type: none"> To construct and pave the road and parking yard within the site
(4) Medical equipment	<ul style="list-style-type: none"> To prepare the medical equipment other than those to be undertaken by Japan 	<ul style="list-style-type: none"> To provide the medical equipment which is listed in Article 4.2.4
(5) Furnitures and fittings	<ul style="list-style-type: none"> To prepare general furniture such as tables, chairs, carpet, curtain, etc 	
(6) Transportation of construction materials and medical equipment	<ul style="list-style-type: none"> To ensure tax exemption and customs clearance at port of disembarkation 	<ul style="list-style-type: none"> To ensure marine transportation from Japan to Papua New Guinea and internal transportation from port of disembarkation to the site

(2) Rabaul Nonga Nonga Base Hospital

Item	Papua New Guinea	Japan
(1) Infrastructure 1. Site development	<ul style="list-style-type: none"> To demolish, remove existing buildings To clear, level the site 	
2. Water supply	<ul style="list-style-type: none"> To rearrange, maintain water supply piping within the site 	<ul style="list-style-type: none"> To connect water supply pipe to supply main at nearly the new building
3. Drainage	<ul style="list-style-type: none"> To rearrange, maintain drainage and sewage piping within the site 	<ul style="list-style-type: none"> To connect drainage and sewage pipe to catch basin located at nearby the new building
4. Electric power	<ul style="list-style-type: none"> To lead electric power supply line to the new building To rearrange, maintain electric supply line within the site 	
5. Telephone	<ul style="list-style-type: none"> To lead telephone line to main terminal panel 	<ul style="list-style-type: none"> To provide main terminal and telephone system within the new building
(2) Building	<ul style="list-style-type: none"> To bear expenses and charges required to obtain the building permission 	<ul style="list-style-type: none"> To construct the facilities with required utilities which is described in Article 4.2.3
(3) Outdoor		<ul style="list-style-type: none"> To construct the open corridor as shown on the drawing To pave in front of the new building
(4) Medical equipment	<ul style="list-style-type: none"> To prepare the medical equipment other than those to be undertaken by Japan 	<ul style="list-style-type: none"> To provide the medical equipment which is listed in Article 4.2.4
(5) Furnitures and fittings	<ul style="list-style-type: none"> To prepare general furniture such as tables, chairs, carpet, curtain, etc 	
(6) Transportation of construction materials and medical equipment	<ul style="list-style-type: none"> To ensure tax exemption and customs clearance at port of disembarkation 	<ul style="list-style-type: none"> To ensure marine transportation from Japan to Papua New Guinea and internal transportation from port of disembarkations to the site

(3) Madang Provincial Hospital

Item	Papua New Guinea	Japan
(1) Infrastructure		
1. Site development	<ul style="list-style-type: none"> To demolish, remove existing buildings To clear, level the site 	
2. Water supply	<ul style="list-style-type: none"> To rearrange, maintain water supply piping within the site 	<ul style="list-style-type: none"> To connect water supply pipe to supply main at nearly the new building
3. Drainage	<ul style="list-style-type: none"> To rearrange, maintain drainage and sewage piping within the site 	<ul style="list-style-type: none"> To connect drainage and sewage pipe to catch basin located at nearly the new building
4. Electric power	<ul style="list-style-type: none"> To lead electric power supply line to the new building To rearrange, maintain electric supply line within the site 	
5. Telephone	<ul style="list-style-type: none"> To lead telephone line to main terminal panel 	<ul style="list-style-type: none"> To provide main terminal and telephone system within the new building
(2) Building	<ul style="list-style-type: none"> To bear expenses and charges required to obtain the building permission 	<ul style="list-style-type: none"> To construct the facilities with required utilities which is described in Article 4.2.3
(3) Outdoor		<ul style="list-style-type: none"> To construct the open corridor as shown on the drawing To pave in front of the new building
(4) Medical equipment	<ul style="list-style-type: none"> To prepare the medical equipment other than those to be undertaken by Japan 	<ul style="list-style-type: none"> To provide the medical equipment which is listed in Article 4.2.4
(5) Furnitures and fittings	<ul style="list-style-type: none"> To prepare general furniture such as tables, chairs, carpet, curtain, etc 	
(6) Transportation of construction materials and medical equipment	<ul style="list-style-type: none"> To ensure tax exemption and customs clearance at port of disembarkation 	<ul style="list-style-type: none"> To ensure marine transportation from Japan to Papua New Guinea and internal transportation from port of disembarkations to the site

(4) Matters Related to the Project Implementation

Following matters related to the implementation of the Project other than that listed above are to be undertaken by the Government of Papua New Guinea;

- (i) Banking arrangements (B/A) and related costs**
- (ii) Contracting for consultants services for the design and supervision of facilities and medical equipment**
- (iii) The tender for selecting contractors for constructing the facilities and contracting for the construction work**
- (iv) The tender for selecting contractors for procurement of medical equipment and contracting for the procurement**
- (v) Obtaining the Government of Japan's verification for the consultant contract, construction contract, and equipment procurement contract**
- (vi) Issuing authorization to pay (A/P) for payment based on the contracts in (v)**
- (vii) Issuing certificates based on each contract**
- (viii) Accord Japanese consultants and contractors such facilities as may be necessary for their entry into Papua New Guinea and stay therein for the performance of their work and exempting them from customs duties, internal taxes and other fiscal levies.**
- (ix) Ensuring tax exemption for import materials and equipment used for the Project and bearing the necessary costs related to the above handling.**
- (x) Providing prompt arrangement for unloading and custom clearance at port of disembarkation in Papua New Guinea and inland transportation of materials and equipment used for the Project.**

4.3.3. Construction Situation Relating Implementation

(1) Construction Situation

1) Detail Design

In general, applications for approval for construction of facilities within Papua New Guinea must be submitted to the appropriate DOW provincial office. For this project, the applications for approval must be submitted to the DOW headquarters for approval. The flow for applications for approval of construction permits is show in Figure 4.3-2.

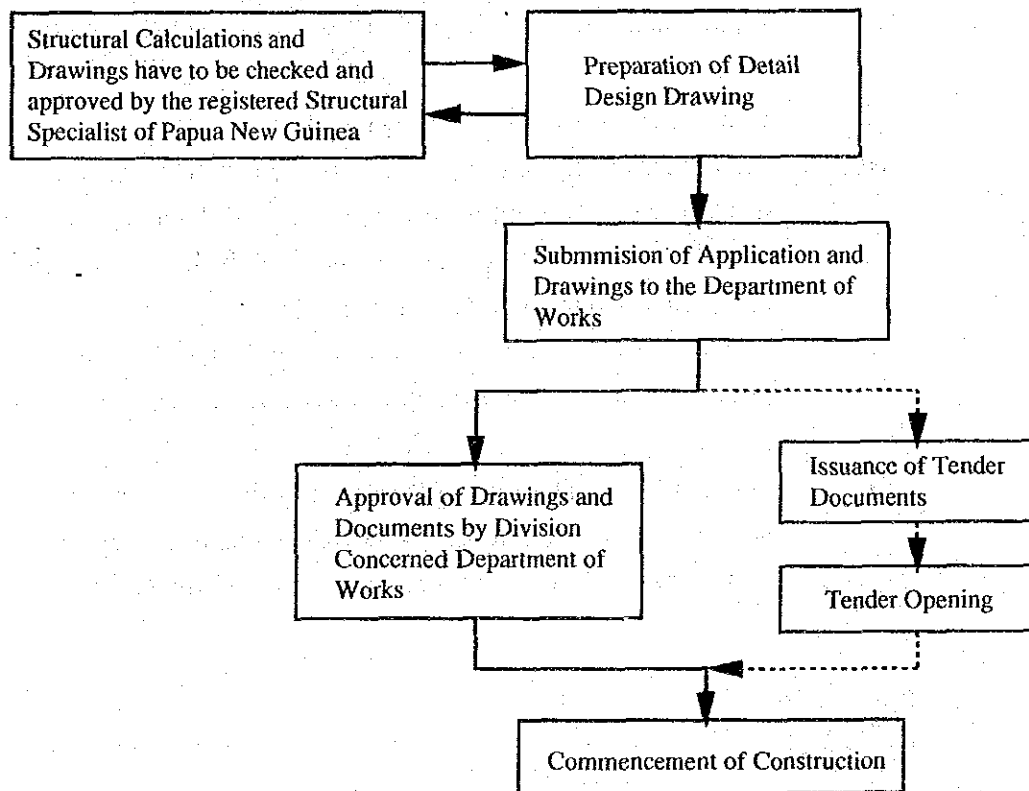


Fig. 4.3-2 Procedure to Obtain Approval for Construction

As Figure 4.3-2 shows, the structural design and calculation sheets must be checked and signed by structural specialist registered with the government of Papua New Guinea. Other design drawings must be checked by a registered architect for coordination of drawings, terminology and legal requirements. Thus, the participation of a local consultant is necessary.

2) Local Contractors

The Society of Professional Engineers of Papua New Guinea is the association of design consultants in Papua New Guinea. There are local consultants who have worked in the past with Japanese consultants on Government of Japan Grant Aid Cooperation among the members of this association. There are few large construction companies in Papua New Guinea and most these companies have their head offices in Australia or New Zealand. There are about 10 local construction companies that can handle relatively small construction projects. Both general contractors and subcontractors are managed by Australians and New Zealanders who also serve as foremen at these construction companies. While the technical level of skilled construction workers is below that of advanced countries, there are skilled joinery carpenters, etc. although few in number. In general, there are few skilled craftsmen while there many unskilled craftsmen and helpers.

Construction materials produced in Papua New Guinea include aggregate, concrete blocks, lumber, plywood, paint, and PVC pipe. Other major construction materials (cement, reinforcing steel, metal fittings, etc.) are imported from Australia, New Zealand, Japan, and other foreign countries. Most of the standards are Australian standards.

(2) Matters to be Considered

As noted in 4.1.1 Basic Policy (3) Social Conditions, long vacations tend to be concentrated in the two month period before and after Christmas and working activity in Papua New Guinea comes to a halt during this period. Thus for the implementation of the Project understanding of procedures and conformation of schedules is necessary in advance. Especially as for each procedures for the consultants contract, approval of drawings, obtaining of construction permits,

arranging for banks, contracts for construction contractors and equipment procurement contractors, and other details in the implementation stage of the Project, it is necessary to be aware of the details of the Grant Aid Cooperation System of the Government of Japan and the differences in the fiscal years of the Governments of Japan and Papua New Guinea.

It is important that the Grant Aid Cooperation System of the Government of Japan have to be clearly understood by the recipient and implementing agencies of the Government of Papua New Guinea prior to commencing the implementation of the Project. Also, as the sites are scattered in three locations and construction work for two sites will be simultaneously progressing, it will be necessary to have a clear understanding of material procurement, transportation methods, schedules, and other factors.

As the capabilities of existing hospitals cannot be reduced during the construction of the facilities, it will be necessary to conduct detailed discussions with hospital staff in the field. Especially careful attention is desirable for equipment that will be relocated.

4.3.4. Supervision Plan for Execution

(1) Supervision Plan for Execution

After the construction contract for this project is concluded, the project manager responsible for the Project and the supervisor will provide necessary instructions to the contractors executing the work at the sites in Papua New Guinea. Also discussions and confirmation regarding execution schedule and necessary procedure should be conducted at the same time. After construction is commenced, the supervisor will stay in Papua New Guinea and using Madang as a base, supervise the execution of the work for the three hospitals at Kundiawa, Rabaul, and Madang. Periodic trips will be made to the sites at Kundiawa and Rabaul to supervise work. In addition to supervising the execution of the work, the resident supervisor will be responsible for periodically reporting to Embassy of Japan and the JICA Office in Papua New Guinea, and the agencies concerned the Government of Papua New Guinea regarding the status of execution and coordinating the views and maintaining mutual understanding of parties related

to this project including the executing contractors. The project manager responsible for the project and those responsible for the structure, and utilities will make periodic inspections for spot supervision at the sites as necessary. Those responsible for medical equipment will supervise the procurement of equipment in Japan and conduct inspections in the field of medical equipment including that procured from third countries. Also, the installation of medical equipment will be supervised if necessary. The resident supervisor will stay until the procedures for delivering the completed facilities and medical equipment.

In conducting this project, adequate awareness of the climate, religions, customs and system of Papua New Guinea is necessary. Also, it will be necessary to understand the capabilities of local workers to supervise the execution of the project. The overall objective of the supervision of the execution is smooth and excellent results including completion of the construction with the allotted schedule.

The schedule for execution will take the local technical and execution capability and the time required for materials procured in Japan to deliver the site into account and will be compiled, reviewed in detail, and then adjusted based on the review.

The supervision of execution will include:

(i) Supervision and Advice Related to Construction Contracts

Pre-qualification of tenderers, preparation and implementation of tender, assessment of tender content and details, selection of construction contractors, participate in the negotiation of construction contracts

(ii) Inspection and Approval of Shop Drawings, etc.

Inspection and approval of shop drawings, material samples, facility equipment, and other materials submitted by the construction contractor

(iii) Supervision and Inspection of Construction

Review and supervision of execution plans and schedules, understanding and supervision of state of progress of construction, conducting necessary inspections

(iv) Approval of Payments

Conducting inspections during construction and after completion of construction to confirm necessary progress and issuing of approvals for payment

(v) Construction Status Reports

Periodic reports regarding the progress of construction will be made to the agencies concerned the both Government of Japan and Papua New Guinea, and will contribute to promote smooth implementation of the scopes of the work undertaken by the Government of Japan and the Government of Papua New Guinea.

(vi) Delivery of Facilities and Medical Equipment

After completion of construction and confirmation that the contractual conditions have been fulfilled, participate in the delivery of facilities and medical equipment based on the contract, and the supervision will be completed after the Government of Papua New Guinea issues a certificate of acceptance

4.3.5 Procurement Plan

(1) Construction Materials

1) Procurement in Papua New Guinea and Japan

a) Procurement in Papua New Guinea

Domestically Produced Materials: aggregate, lumber, plywood, concrete blocks, paint, PVC products

Imported Materials: cement, steel reinforcing bars, bricks, tile, metal fittings, locks, roofing material, ceiling materials, interior finish materials, general facility materials (pipes, electric equipment, etc., porcelain sanitary fixtures, air conditioning equipment (the above are imported from Australia, New Zealand, Japan, and other countries).

b) Procurement in Japan

fabricated hardware, power panels, switch panels, and order made to order components, major medical equipment, etc.

2) Reasons for Procurement in Japan

The materials to be procured in Papua New Guinea (including imported materials) are generally used and are available in adequate quantity and quality. Thus, procurement of materials in Papua New Guinea for implementation of construction is one principle. Procurement in Japan and other countries will be based on the following conditions:

- a) If there are problems related to ensuring quantity, quality, dimensions or precision
- b) If the cost of procurement include shipping and handling in Japan or another country is less than the cost of procurement in Papua New Guinea
- c) If materials that can be procured in Papua New Guinea are not appropriate in terms of capability or do not fulfill system requirements
- d) If procurement of materials for maintenance and spare parts is uncertain.
- e) In regard to third country procurement, one conditions is that the technical standards of that country are adequate

(2) Medical Equipment

Currently, most of the medical equipment used by hospitals in Papua New Guinea have been procured via Australia. If procurement of equipment from a third country is advantageous (price, maintenance, etc.), then procurement from third countries will be pursued and procurement will not be limited to Japan.

4.3.6. Implementation Schedule

(1) Implementation Periods

If the Project is implemented under Grant Aid Cooperation by the Government of Japan, taking Grant Aid Cooperation system of the Government of Japan into account, it is considered to be appropriate that the execution of works will be carried out within two stages and then the implementation period will be divided into two periods. In this case, for each stages after completion of signing the Exchange of Notes, the stages of execution of consultant contracts, preparation of detailed design drawings and tender documents, conduct of tender activities, execution of construction and equipment procurement contracts, and construction of facilities and acquisition of medical equipment will be proceeded. The sites for construction of facilities for the Project are located in three provinces in Papua New Guinea. Kundiawa is located in the highlands, Rabaul is located on another island, and Madang is located on a coastal site. These sites have completely different geographic conditions and material transport, labor, and other construction related conditions are very different. Taking these factors into account, consideration of the division of the construction of facilities and procurement of medical equipment for the Project into two stage will be conducted.

(2) Detail Design Work

In regard to implementation of this project under the Grant Aid Cooperation from the Government of Japan, after the Exchange of Notes are signed by the Governments of Japan and Papua New Guinea, and a contract regarding consulting services for the Project will be promptly concluded and preparation of detailed design will be commenced. Adequate discussions with the agencies concerned the Government of Papua New Guinea based on the Basic Design

Study Report regarding the content of the detailed design will be conducted and the detailed design and the tender documents will be prepared with taking the result of the above discussions into account. The project manager and the staff members responsible for architectural design, utilities design, and medical equipment planning will participate in the detailed design discussion in Papua New Guinea. 3 months will be allocated for the preparation of the tender documents. The first stage will be completed after the approval of the Government of Papua New Guinea for the detailed design and tender documents, and it is anticipated that this will require four months from the exchange of notes. For the second phase, these procedures are anticipated to require about four months.

(3) Tender

After announcement of the tender and pre-qualification of contractors applying for participation in the tender, and other preparations, the tender documents will be issued to the bidders qualified, the tenders assessed, the contractor selected, and then contracts for construction and equipment procurement are concluded. Excluding the preparation period, it is anticipated that about two months will be required until commencement of the construction work. For the second stage, it is anticipated that this will require about two months.

(4) Construction and Installation of Medical Equipment

After conclusion of contracts between the Government of Papua New Guinea and the selected contractors and verification by the Government of Japan, execution of construction and procurement of medical equipment will begin. It is anticipated that construction of the facilities will require about 12 months and during this period, facility equipment and medical equipment will be installed and trial operation will be conducted. For second stage it is anticipated that the construction of facilities will require about 12 months.

In regard to allocation of implementation work between the two stages, it was deemed appropriate to put the work for the Rabaul Nonga Base Hospital and the Madang Provincial Hospital into the second stage as work to be handled by the Government of Papua New Guinea such as construction of temporary facilities and transfer of units is necessary and time for preparation and allotment of

budget for this is necessary.

	1st Stage	2nd Stage
Kundiawa	Facilities	Medical Equipment
Rabaul • Nonga	—	Facilities and Medical Equipment
Madang	—	Facilities and Medical Equipment

(5) Implementation Schedule

1) The First Stage (Kundiawa Provincial Hospital Facilities)

		1	2	3	4	5	6	7	8	9	10	11	12		
Detail Design	Design Meeting in PNG														
	Preparation														
	Confirmation in PNG														
		(Total 3.3 months)													
Kundiawa Provincial Hospital-Construction of Facilities)															
Execution & Procurement	Preliminary Work														
	Foundation Work														
	Structure Work														
	Finish Work														
	Utility Work														
	Outdoor Work														
		[Procurement of Medical Equipment will be implemented in the Second Stage.]													
	Procurement														
Transportations															
Installation	(Total 12 months)														

2) The Second Stage [Kundiawa Provincial Hospital-Medical Equipment, Rabaul Nonga Base Hospital & Madang Provincial Hospital]

		1	2	3	4	5	6	7	8	9	10	11	12	
Detail Design	Design Meeting in PNG													
	Preparation of Drawing													
	Confirmation in PNG													
	(Total 3.3 months)													

		1	2	3	4	5	6	7	8	9	10	11	12	
Kundiawa Provincial Hospital-Procurement of Medical Equipment														
Procurement	Procurement	████████████████████												
	Trans- portations						██████████							
	Installation							██████████	██████████					
		(Total 9 months)												
Rabaul Nonga Base Hospital														
Execution & Procurement	Preliminary Work	██████████												
	Foundation Work		██████████	██████████	██████████									
	Structure Work			██████████	██████████	██████████	██████████	██████████						
	Finish Work					██████████	██████████	██████████	██████████	██████████	██████████			
	Utility Work					██████████	██████████	██████████	██████████	██████████	██████████			
	Outdoor Work											██████████	██████████	
	Procurement				██████████	██████████	██████████	██████████	██████████					
	Trans- portations									██████████				
	Installation											██████████	██████████	
		(Total 12 months)												
Madang Provincial Hospital														
Execution & Procurement	Preliminary Work	██████████												
	Foundation Work		██████████	██████████										
	Structure Work			██████████	██████████	██████████	██████████							
	Finish Work					██████████	██████████	██████████	██████████	██████████				
	Utility Work					██████████	██████████	██████████	██████████	██████████				
	Outdoor Work										██████████	██████████		
	Procurement				██████████	██████████	██████████	██████████						
	Trans- portations									██████████				
	Installation											██████████	██████████	
		(Total 11 months)												

4.3.7 Estimated Project Cost

Estimated Project Cost to be borne by the Government of Papua New Guinea 695,000 kina

Breakdown of Cost

(1) Kundiawa Provincial Hospital	506,900 kina
1) Demolish and remove existing facilities and clear the site	74,400
2) Lead city water supply pipe into the site	2,100
3) Connect drainage pipe between waste water reservoir tank and street main	414,000
4) Lead electric power supply line to the transformer substation	16,400
(2) Rabaul Nonga Base Hospital	82,600 kina
1) Demolish and remove existing facilities and clear the site	64,800
2) Arrange water supply piping in the ground for connect to the project facility	1,400
3) Arrange seaway piping in the ground for connect to the project facility	2,100
4) Lead electric power supply line to the project facility	14,300
(3) Madang Provincial Hospital	105,500 kina
1) Demolish and remove existing facilities and clear the site	87,700
2) Arrange water supply piping in the ground for connect to the project facility	1,400

- | | |
|--|--------|
| 3) Arrange seaway piping in the ground for connect to the project facility | 2,100 |
| 4) Lead electric power supply line to the project facility | 14,300 |

CHAPTER 5 EFFECTIVENESS OF PROJECT AND CONCLUSIONS

CHAPTER 5 EFFECTIVENESS OF PROJECT AND CONCLUSIONS

5.1. Effectiveness of Implementation of the Project

Implementation of the Project for the three hospitals at Kundiawa, Rabaul Nonga, and Madang is intended to meet the demand for health care from the population of the areas served by the hospitals by improving the secondary health care capability of the hospitals. The population served by the three hospitals and would benefit from this project is about 640,000. This is 64% of the total population served by the 7 hospitals originally proposed for the Project of the Provincial Hospitals Redevelopment Phase II and is 17.3% of Papua New Guinea's total population. Thus, it is anticipated that the implementation of the Project will contribute to raising the level of health care in Papua New Guinea.

Current, some of the common problems facing the hospitals involved in this project are shortage of medical staff, inadequate size and deterioration of facilities, shortage of basic medical equipment, and the lack of master plans for facility placement. The shortage of medical staff is related to the shortage in absolute number of physicians in Papua New Guinea while the shortage of paramedicals and nurses is related to insufficient budgets thus there are difficulty to resolve these problems. The deterioration of the facilities could be dealt with by increases in the maintenance and operating budgets. The inadequate size of health care facilities and shortage of medical equipment lowers the effectiveness of medical services. In the Project the capabilities and patient flow for the core of medical service units in the hospitals, especially those facilities that are highly deteriorated and inadequate in size, will be rearranged and unified taking the view for the future into account. Construction of facilities, supply of basic medical equipment, improvements in health care capability and rationalization and increases in effectiveness of health care activities will make provision of medical services by the current medical staff easier. In addition, effects such as reduction of facility maintenance costs and control of operating budgets increase are anticipated.

The anticipated effectiveness and extent of improvement over current conditions are as follows for each hospital.

(1) Kundiawa Provincial Hospital

Current Situation and Problems	Countermeasures by the Project	Effectiveness of the Project and Extent of Improvement
* The deterioration of the wards is marked, the interior of the rooms is dark, the various required facilities (examination rooms, treatment rooms, dirty utility room, etc.) are inadequate, appropriate nursing activity is being hindered	* Nightingale style wards with necessary facilities will be constructed for each clinical department	* Environment of wards will be improved and nursing activity made easier
* Labour room is too small, inadequate number of labour beds (2) and no space to install more	* Obstetrics and Gynecology Ward (34 beds) with 4 bed labour room and abnormal labour room will be provided	* Make it possible to meet demand
* Although major and minor operating theatres are available, both are smaller than standard, as there is no emergency outpatient facility use is high and facilities are inadequate, there is no proper recovery room and part of the corridor is used for this purpose, the central sterile supplies department is the scale of an operating theatre preparation room and is inadequate	* Facility with two major and one minor operating theatres, recovery room, nurses station, and other necessary facilities including a central sterile supplies department of adequate scale for the entire hospital will be constructed, emergency outpatient facility with necessary equipment will be provided	* Surgical environment will be improved and the increased number of operating theatres will make it easier to meet the demand for 4 to 5 operations per day. * Appropriate response to emergency outpatient cases will be made easier
* Administrative offices are scattered among facilities that are scattered in the grounds and administrative efficiency is not very high	* Administrative offices will be located together in a facility	* Communication within the administration department will be made easier and improvement of administrative efficiency should result
* Service facilities are deteriorated	* Service facilities will be built	* Increase of maintenance cost will be controlled
* Foundation of the outpatient building is inadequate and subsidence is occurring, subsidence of the floor was observed	* Main building including outpatient units with current functions and appropriate capabilities will be built	* Problems from using a building with major structural problems will be eliminated

(2) Rabaul Nonga Base Hospital

Current Situation and Problems	Countermeasures by the Project	Effectiveness of the Project and Extent of Improvement
* For general and pediatric outpatient, there 4 preliminary examination cubicles, the number and size of examination, treatment, and other rooms is inadequate relative to the number of patients. There is no proper waiting room and there is extreme crowding in the sub-waiting room.	* 6 preliminary examination cubicles will be designed for general and pediatric outpatient, other necessary rooms will be prepared, waiting space and inner waiting space will be provided	* Overcrowding of outpatient will be alleviated, patients will be able to wait in a relaxed area and examination and treatment environment will be improved.
* The treatment room and minor operating theatre facilities of emergency outpatient are too small and do not appear to be used very much. The entry for emergency patients is the middle of the front of the hospital and in full view	* Emergency outpatient of appropriate scale and necessary rooms will be provided near the exiting operating theatres at the south end of the project facilities.	* Will be located in a corner that will be able to link with the existing operating theatre easily. The emergency outpatient minor operating theatre will be provided easy to use and the usage of the existing operating theatres will be eased
* There is currently no dental outpatient and local residents must go to a dental clinic in the middle of Rabaul City	* One dental treatment room will be provided	* Need to go to central Rabaul for simple treatment will be eliminated and use by local residents will be made easy
* The rooms used by the administration department are scattered in a 100 m long building and there are many inconveniences for daily operations	* The various rooms of the administrative department will be gathered together in the project facility	* Internal communication in the administrative department will be made easier and increase efficiency of daily operations should result
* The X-ray room is inadequately shielded. The related rooms including dark room, staff room, and waiting room are inappropriate.	* A X-ray room with appropriate shielding and other necessary facilities for the x-ray unit will be provided	* An appropriate environment for staff and patients in the X-ray department including adequate shielding will be established.
* The donation room, storage room, and other necessary capabilities for the blood bank are inadequate	* A blood bank with the appropriate capabilities is included in the project facilities	* Appropriate capabilities for a blood bank will be prepared and it should be possible for the facility fulfill its role
* The building housing the X-ray room, blood bank, and pathology is heavily damaged by termite. Also, the central sterile supplies department's building is also heavily termite damaged.	* Existing building will be demolished and all of the functions and capabilities will be moved to the project facility * Central sterile supplies room will be handled as above except physiotherapy unit that will be moved to the space for current library	* Necessary capabilities will be arranged and improvements in each examination capability should result
* The ICU is currently one bed in the intermediate ward and is inconvenient for management and number of ICU bed is insufficient	* ICU with nurse station, intensive care room, and isolation room will be included in the project facility	* Nursing management should become easier and improved intensive care should result

(3) Madang Provincial Hospital

Current Situation and Problems	Countermeasures by the Project	Effectiveness of the Project and Extent of Improvement
* General outpatient is very small compared to the number of patients, the number of examination and treatment rooms is small and the crowding of the waiting room is extreme	* Appropriate larger floor space with 6 examination cubicles and waiting room to deal with the number of outpatients will be provided	* The increase in floor space and number of rooms should alleviate the crowding within the facility and improve the treatment environment
* Pediatric outpatient is located in another building away from general outpatient resulting in a number of inconveniences	* Pediatric outpatient will be located adjacent to general outpatient in the project facility	* Close linkages with other outpatient units and administration should be possible.
* Emergency outpatient only has a treatment room, lacks necessary facilities, and linkage with related facilities is inconvenient. The location near the center of the front of the outpatient building is inappropriate.	* Emergency outpatient unit with the various necessary rooms will be located in the project facility away from the front of the facility	* Capabilities and linkages with general outpatient and the operating theatres will be improved and it will be easier to provide appropriate treatment for emergency patients
* Flooding of the outpatient examination area occurs after heavy rains.	* The floor of the project facility will be 70 cm higher than the floor of the existing outpatient building	* Flooding of the new facility should be avoided since the highest observed levels have been 30 cm above floor level
* The various rooms of the administration department are scattered in the 90 m long outpatient building, there are cramped areas, and the situation is inconvenient for operations.	* The various rooms of the administrative department will be gathered together in the project facility	* Internal communication in the administrative department will be made easier and increase efficiency of daily operations should result
* The dispensary is located in an separate building near the wards and is very inconvenient for outpatients as it is located away from outpatient. Also, the presence of large numbers of patients from outpatient in the vicinity of the wards is not desirable from a management standpoint. The facility is also cramped at 59 m ² .	* A dispensary facility of appropriate scale and equipped with the necessary facilities will be located in the project building near the general outpatient department.	* It will become more convenient for outpatients to receive their medication and easier for the hospital to manage the wards
* Preparation for installation of an ICU are underway but the schedule for completion has not been determined. It is desirable to quickly install the facility. The full nursing ward was converted from an intermediate ward.	* As the current intermediate ward will be demolished to make space for the project facility, a full nursing room and intensive care unit will be provided in the project facility	* The installation of the intensive care unit should especially raise the level of health care

5.2. Conclusion

As described above, a number of positive effects can be expected from the Project which would be one aspect of providing improved health care to the citizens of Papua New Guinea and would contribute to raising the standards for health care in Papua New Guinea. Thus, this project has been recognized to be appropriate for Grant Aid Cooperation. As this project has been planned assuming that staff and operating budget would not be required, the replacement of deteriorated facilities, the accompanying increases in facility capabilities, and anticipated increased effectiveness of medical activity should allow the existing staff and operating budget to easily operate and administer these hospitals.

APPENDIX I BASIC DESIGN SURVEY

1. Member List of Survey Team
 - 1-1 Basic Design Survey Team
 - 1-2 Draft Report Explanation Team

2. Survey Schedule
 - 2-1 Basic Design Survey
 - 2-2 Draft Report Explanation

3. Member List of Concerning Party in Papua New Guinea
 - 3-1 Concerning Party of Papua New Guinea
 - 3-2 Concerning Party of Japan

4. Minutes of Discussion
 - 4-1 Basic Design Survey
 - 4-2 Draft Report Explanation

APPENDIX II HEALTH STATISTICS

APPENDIX I BASIC DESIGN SURVEY

I. Member List of Survey Team

1-1 Basic Design Survey Team

Leader	Ken OKAMOTO	Director The 2nd Tokyo National Hospital
Hospital Planning	Hidetoshi TSUCHIYA	Chief Health Statistics Division, Statistics and Information Department, Ministry of Health and Welfare
Project Coordination	Ichita YAMAMOTO	Staff First Basic Design Study Division, Grant Aid Planning and Survey Department, Japan International Cooperation Agency
Architectural planning	Yasuchika NISHIJIMA	Chief Architect Architectural Department, Raymond Architectural Design Office, Inc
Architectural designing	Nobuaki MIYATA	Architect Architectural Department, Raymond Architectural Design Office, Inc.
Utilities planning	Hiroshi SUGIMOTO	Engineer Utilities Department, Raymond Architectural Design Office, Inc.
Medical equipment planning-1	Yukio CHUJO	Medical Equipment Planner Raymond Architectural Design Office, Inc.
Medical equipment planning-2	Tatsuro NAKAJIMA	Medical Equipment Planner Raymond Architectural Design Office, Inc.

1-2 Draft Report Explanation Team

Leader	Ken OKAMOTO	Director The 2nd Tokyo National Hospital
Project Coordination	Masayuki KUSAMA	Staff First Project Management Division, Grant Aid Project Management Department, Japan International Cooperation Agency
Architectural planning	Yasuchika NISHIJIMA	Raymond Architectural Design Office, Inc
Medical equipment planning	Yukio CHUJO	Raymond Architectural Design Office, Inc.

2. Survey Schedule

2-1 Basic Design Survey

	Date	Activity			
1	Jan. 19 (Sat)		Tokyo--(JL771)		
2	20 (Sun)		Sydney		
3	21 (Mon)	a.m. p.m.	Sydney--(PX004)--Port Moresby Courtesy visit to JICA Office, Arranging Field Survey Schedule		
4	22 (Tue)	a.m.	Courtesy visit to Embassy of Japan Office of International Development Assistance (OIDA) Department of Health (DOH)		
			Team A		Team B
		p.m.	Deliberation with DOH	p.m.	Port Moresby--(PX4128)-- Madang
5	23 (Wed)	a.m.	Deliberation with DOH	a.m.	Observation of Madang Hospital
		p.m.	Port Moresby--(PX202)--Rabaul	p.m.	Madang Hospital--Deliberation
6	24 (Thu)	a.m.	Courtesy visit to Premier of East New Britain Observation of Nonga Hospital	a.m.	Courtesy visit to Provincial Secretary Investigation of Mandang Hospital facilities & equipment
		p.m.	Deliberation with Nonga Hospital staff and officials Observations of Vunapope Hospital	p.m.	Deliberation with DOW-Madang Observation of CAHS Collection of data & information related to construction
7	25 (Fri)	a.m.	[Government Member] Rabaul--(PX209)--Port Moresby	a.m.	Supplemental investigation of Madang Hospital
		p.m.	DOH--Deliberation [Consultants Member] Rabaul--(PX201)--Port Moresby	p.m.	Madang--(PX111)--Portmoresby
8	26 (Sat)		Compiling data & information		
9	27 (Sun)	p.m.	Port Moresby--(PX762)-- Kundiawa Meeting with Kundiawa Hospital staff and officials		Compiling data & information
10	28 (Mon)	a.m.	Observations of 3 sites proposed for the Project Site and Kurediawa Hospital	a.m.	Port Moresby--(PX750)--Daru Courtesy visit to DOH, Department of Daru Deliberation with Daru Hospital staff
		p.m.	Deliberation with Kundiawa Hospital staff and officials	p.m.	Investigation of Daru Hospital facilities & equipment
11	29 (Tue)	a.m.	Kundiawa--(Vehicle)--Mount Hargen	a.m.	Deliberation with Daru Hospital staff and officials
		p.m.	Observation of Mount Hargen Hospital	p.m.	Investigation of Daru Hospital
12	30 (Wed)	a.m.	Mount Hargen--(Vehicle)--Wabag Observation of Wabag Health Center and 2 sites proposed for Project Site	a.m.	Supplemental investigation
		p.m.	Observation of Sopas Hospital Deliberation with officials of Department of Enga Province Wabag--(Vehicle)--Mount Hargen	p.m.	Daru--(GV602)--Port Moresby Compiling data & information

	Date	Activity			
13	31 (Thu)	a.m.	Mount Hargen-(PX060)-Port Moresby	a.m.	Collecting Data & information related to construction
		p.m.	Deliberation with DOH and OIDA on Minutes Observation of Port Moresby General Hospital		
14	Feb. 1 (Fri)	a.m.	Signing the Minutes at OIDA		
		p.m.	Compiling data & informations		
15	2 (Sat)		Collecting data & informations		
16	3 (Sun)		[Government Member] Departed Port Moresby-(PX003)-Brisbane [Consultants Member] Collecting data & informations		
17	4 (Mon)	a.m.	Deliberation with DOH -Hospital Management System	a.m.	Port Moresby-(GV231)-Kerema Deliberation with Kerema Hospital staff
		p.m.	Deliberation with DOW -Facility & Equipment Maintenance System	p.m.	Investigation of Kerema Hospital facilities equipment
			[Government Member] Brisbane-(JL778)-Tokyo		
18	5 (Tue)	a.m.	Collecting data & information related to construction	a.m.	Courtesy visit to Provincial Secretary Investigation of kerema Hospital water supply system
				p.m.	Kerema-(GV236)-Port Moresby
19	6 (Wed)	p.m.	Port Moresby-(PX762)-Kundiawa Deliberation with Kundiawa Hospital staff and officials		
20	7 (Thu)	a.m.	Field Survey of Project Site Investigation of Kundiawa Hospital facilities equipment		
		p.m.	Courtesy visit to Provincial Secretary Deliberation with Kundiawa Hospital staff and DOW		
21	8 (Fri)	a.m.	Investigation of Kundiawa Hospital facilities & equipment Collecting data & information		
		p.m.	Kundiawa-(Vehicle)-Mount Hargen		
22	9 (Sat)		Mount Hargen-(PX183)-Port Moresby		
23	10 (Sun)		Port Moresby-(PX028)-Vanimo		
24	11 (Mon)	a.m.	Investigation of Vanimo Hospital facilities & equipment Courtesy visit Provincial Secretary		
		p.m.	Deliberation with Vanimo Hospital staff & officials		
25	12 (Tue)	a.m.	Courtesy visit Premier of Sandaun		
		p.m.	Collecting data & information		
26	13 (Wed)	a.m.	Meeting with DOW, Sandaun Vanimo-(PX133)-Port Moresby		
		p.m.	Compiling data & information		
27	14 (Thu)	a.m.	Port Moresby-(PX4204)-Rabaul Investigation of Nonga Hospital facilities & equipment		
		p.m.	Collecting data & information		
28	15 (Fri)	a.m.	Observation of Rabaul Urban Clinic Observation of Area Medical Store-Rabaul		
		p.m.	Investigation of Nonga Hospital facilities & equipment Deliberation with Hospital staff and officials Collecting data & information		
29	16 (Sat0)	a.m.	Rabaul-(PX207)-Port Moresby		
		p.m.	Compiling data & information		
30	17 (Sun0)		Compiling data & information		
31	18 (Mon)	a.m.	Deliberation with DOH & DOW		
		p.m.	Collecting data & information related to construction Visit to Quantity Surveyor		

	Date	Activity			
		Team C		Team D	
32	19 (Tue)	a.m.	Collecting data & information – Hearing from consultants and contractor – Obtaining Structural Design Standard & various statistics	a.m.	Collecting data & information Hearing from DOH – Operation budget and system – Medical services
		p.m.	– Building Low from DOW – Research material cost	p.m.	– Pharmacist hearing from DOW (PTB) – Maintenance system for facility equipment and medical equipment
33	20 (Wed)	a.m.	Collecting data & information – Hearing from contractor – Observation of ongoing construction sites	a.m.	Collecting data & information – Hearing from WHO
		p.m.	Port Moresby–(PX-128)–Madang	p.m.	– Hearing from forwarder, regarding disembarkation
34	21 (Thu)	a.m.	Investigation of Madang Hospital facilities	a.m.	Collecting data & information – Hearing from OIDA on development plans
		p.m.	Deliberation with Hospital staff Collecting data & information	p.m.	– Hearing from BMES on medical equipment maintenance
35	22 (Fri)	a.m.	Madang–(PX125)–Port Moresby Collecting meteorological records	a.m.	Observation of Port Moresby General Hospital
		p.m.	Deliberation with DOH and DOW		
36	23 (Sat)		Compiling data & information		
37	24 (Sun)		Compiling data & information		
38	25 (Mon)	a.m.	Deliberation with DOH and DOW		
		p.m.	Collecting data & information Briefing to Embassy of Japan and JICA Office		
39	26 (Tue)		[Consultants member] Port Moresby–(PX090)–Cairns		
40	27 (Wed)		Cairns–(QF069)–Tokyo		

Note: Team A: K. Okamoto, H. Tsuchiya, I. Yamamoto, Y. Nishijima, H. Sugimoto, Y. Chujo
Team B: N. Miyata, T. Nakajima
Team C: Y. Nishijima, N. Miyata, H. Sugimoto
Team D: Y. Chujo, T. Nakajima

2-2 Basic Report Explanation

	Date		Activity
1	Jan. 17 (Mon)	a.m.	Tokyo — (JL060) — Cairns
2	18 (Tue)	a.m.	Cairns — (QF 481) — Portmoresby
3	19 (Wed)	a.m.	Courtesy visit to JICA Office Embassy of Japan Arranging Schedule
		p.m.	Courtesy visit to Office of International Development Assistance (OIDA) Department of Health (DOH) Draft Final Report due to be handed in Schedule Explanation
4	20 (Thu)	a.m.	Deliberation with DOH and DOW Draft Final Report due to be handed in Explanation
		p.m.	Observation of the General Hospital of Portmoresby
5	21 (Fri)		Team meeting, preparation of the Reference Material for Deliberation [Internal Meeting - PNG staff only]
6	22 (Sat)	a.m.	Portmoresby—(PX 116)—Madang Observation of Madang Hospital and Deliberation with Medical staff
7	23 (Sun)	p.m.	Madang—(PX 029)—Portmoresby
8	24 (Mon)	a.m.	Deliberation with DOH and DOW
		p.m.	[Internal Meeting - PNG staff only] Team Meeting
9	25 (Tue)	a.m.	Deliberation with DOH, DOW and the representative of the hospital
		p.m.	- Kundiawa hospital facilities and equipments
10	26 (Wed)	a.m.	Courtesy visit to DOH Acting Secretary Deliberation with DOH, DOW and the representative of the hospital
		p.m.	- Rabaul, Nonga hospital facilities - Madang hospital facilities OIDA-Deliberation on draft minute
11	27 (Thu)	a.m.	DOH-Deliberation on draft minutes [Preparation of the Reference material - the consultants]
		p.m.	OIDA-Signing the Minutes Deliberation with DOH, DOW and the representative of the hospital Final deliberation of each facility plan
12	28 (Fri)	a.m.	Report of the result - JICA office - Embassy of Japan
		p.m.	The revised plan based on the Final Deliberation with DOH due to be handed in Portmoresby—(QF 482)—Cairns
13	29 (Sat)	a.m.	Cairns—(JL 069)—Tokyo

3. Member List of Concerning Party in Papua New Guinea

1. Concerning Party of Papua New Guinea

(1) The Government of Papua New Guinea

Department of Health

Dr. Quentin Reilly	Secretary for Health
Dr. Levi Sialis	Acting Secretary for Health
Dr. Edward Talwat	First Assistant Secretary for SHS
Mr. Leonard Loh	Assistant Secretary Policy Planning and Evaluation
Mr. Colemas Moni	Assistant Secretary for Policy & Planning Division
Mr. Stephen L. Clein	Chief of Pharmaceutical Services
Dr. Nicholas Mann	Provincial Hospital Coordinator
Mr. Andrew Posong	Project Coordinator
Mr. Rore Rikis	Land & Medical Building Coordinator
Mr. Emanuel Sokon	Public Investment Program Coordinator
Mr. Peter Gibson	Provincial Hospital Coordinator
Mr. Levi Nasenom	Assistant Executive Officer, SHSD
Ms. Alison Roots	Nurse Clinician

Department of Finance and Planning

Mr. Gabriel Pepson	Director, Office of International Development Assistance (OIDA)
Mr. Frank Agaru	A/Assistant Director Bilateral Program, OIDA
Mr. Simon Sei	Acting Assistant Director Bilateral Programme, OIDA
Mr. Cris Mero	Assistant Secretary, Cooperation Division
Mr. Francis Wagaia	Programme Officer, OIDA
Mr. Masanobu Kiyoka	JICA Expert

Department of Works

Mr. Anthony Peck	Principal Architect
Mr. Derek Kirby	Hospital Architect
Mr. Lewis Preston	Hospital Architect
Mr. Wilfred Olai	Hospital Architect
Mr. Andy Bray	Hospital Engineer
Mr. Andrew Pinge	Electrical Engineer
Mr. Joe N. Guguan	A/Principal Design Engineer
Mr. P. Thillainadesan	Sr. Plant Engineer
Mr. William F. Glynn	Chief. Building Inspector, Building Board
Mr. Ismal Tapo	Biomedical Engineering

National Weather Service

Mr. Paul Penua	Deputy Director
Mr. Guba Gaudi	Assistant Director, Research & Climatology
Mr. Veze J. Kula	Sr. Observer

(2) Provincial Government and Hospital

1) East New Britain Province

Department of East New Britain

Mr. Sinai Brown	Premier
Mr. James Age	Minister for Health, Provincial Government
Mr. Hosea Turbarai	A/Secretary, Department of ENB
Mr. Bernard Lukara	Assistant Secretary for Health, ENB
Mr. Joe Kont	Provincial Architect, Works Department Rabaul
Mr. Samson Kove	C.C.H.S. Health Office, Rabaul

Nonga Base Hospital

Dr. William Kurapa	Medical Superintendent
Mr. Cornelius Kalimet	Hospital Secretary
Dr. Jeffrey Tuvi	A/Medical Superintendent
Ms. Margaret Samei	Hospital Matron

Rabaul Urban Clinic

Mrs. Eliean Bale	Sister in Charge
------------------	------------------

2) Simbu Province

Department of Simbu

Mr. David Mai	Premier
Mr. Joe Bal	Provincial Secretary
Mr. Martin Upa	Provincial Minister for Health
Mr. John Lumbia	A/Assistant Secretary for Health A/Principal Advisor
Mr. Edward Kiza	Superintendent, Primary Health Services
Mr. Giba Swingneo	Medical Officer, Provincial Nutritionist
Mr. Herman Tambagle	A/Provincial Works Coordinator
Mr. Solomon K. Botarah	District Mng. Water Board

Kundiawa Provincial Hospital

Dr. Errol Siba	Medical Superintendent
Mr. Isaac Baikuru	Hospital Administrator

3) Madang Province

Department of Madang

Mr. Maketu	Provincial Secretary
Mr. Siwi Morep	A/Provincial Works Manager
Mr. Dick Bart	Provincial Health Extension Officer

Mandang Provincial Hospital

Dr. Stephen Demok	Medical Superintendent
Mr. Antonnie Kalisa	Hospital Secretary
Dr. Phillip Basse	General Surgeon
Mr. Peter Gaan	A/Hospital Secretary
Mr. Dick Bart	Provincial H.E.O.
Mrs. Rose N. Yapen	Hospital Matron

C.A.H.S.

Mr. Malek Atua	Lecturer in Administration
Mr. Andrea Tuka	Dean
Mr. Joseph Zale	Head of H.E.O. School

4) Enga Province

Department of Enga

Mr. Dansy Tinaiwi	Premier
Mr. Salan Ere	Provincial Minister for Finance
Dr. Samson Aweaw	Assistant Secretary for Health
Mr. Tom M. Popondey	Coordinator, Health Extension Service
Mr. Max Kekeo	Provincial Health Minister

5) Gulf Province

Department of Gulf

Mr. Susuvi	Provincial Secretary
Mr. Peter	A/Assistant Secretary

6) Western Province

Department of Western

Mr. Wesley Malesa	A/Secretary, Department of Western Province
Mr. Jim Maruma	A/Assistant Secretary

Daru Provincial Hospital

Mr. Steven Toiklik	H.E.O. - A/Hospital Secretary
Mr. Bauba Dabu	WSC - Officer in-charge Department of Works
Mrs. Miviam Ase	A/Hospital Matron

7) Sandaun Province

Department of Sandaun

Mr. Egbert W. Yalu	Premier
Mr. Chiris A. Vihuri	Provincial Secretary
Mr. Mas Mal Fahey	Provincial Works Manager
Mr. Charles Moody	Sr. Works Supervisor
Dr. M. Woibun	Assistant Secretary for Provincial Department of Health
Mr. I. Nonori	Principal H.E.O. Health Officer

Vanimo Provincial Hospital

Mr. Jack Mandari	Hospital Secretary
Mr. Cornelius Koralsan	Dental Therapist
Mrs. Ruth Larawin	Hospital Matron
Mr. Kalos Eliap	Medical Laboratory Technician
Mr. Chiristpher Pasmel	Nursing Officer, Officer in-charge
Mr. Matheo Nangui	Radiographer

2. Concerning Party of Japan

(1) Embassy of Japan

Mr. Akio Noguchi	Ambassador Extraordinary and Plenipotentiary
Mr. Kenro Iino	Counselor
Mr. Makoto Wakasugi	Counselor
Mr. Yutaka Fujiwara	Secretary
Mr. Takaki Ohiwa	Secretary

(2) Japan International Cooperation Agency Papua New Guinea Office

Mr. Toshio Okazaki	Resident Representative
Mr. Tatsuo Kasai	Resident Representative
Mr. Akira Kumano	Acting Resident Representative
Mr. Masayoshi Ohono	Staff
Mr. Kyoji Mizutani	Staff

4. Minutes of Discussion
4-1 Basic Design Survey

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON
THE PROVINCIAL HOSPITALS REDEVELOPMENT
PROJECT PHASE II
IN
PAPUA NEW GUINEA

In response to the request of the Government of Papua New Guinea, the Government of Japan decided to conduct a Basic Design Study on the Provincial Hospitals Redevelopment Project Phase II in Papua New Guinea (hereinafter referred to as "the Project") and the Japan International Cooperation Agency (JICA) sent the study team, headed by Dr. Ken OKAMOTO, Director, the Second Tokyo National Hospital, from January 19th to February 27th, 1991.

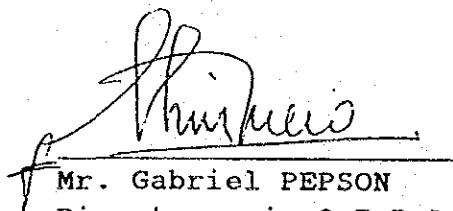
The team had a series of discussions with the authorities concerned of the Government of Papua New Guinea and conducted a field survey in the Project areas.

As a result of the discussions and field survey, both parties confirmed the main items described on the attached sheets. The team will proceed to the works and prepare the Basic Design Report.

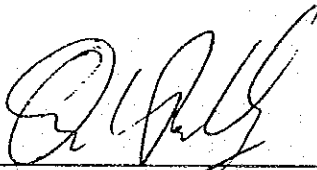
Port Moresby, February 1st, 1991



Dr. Ken OKAMOTO
Leader
Basic Design Study Team
JICA



Mr. Gabriel PEPSON
Director a.i., O.I.D.A.
Department of Finance
and Planning



Dr. Quentin REILLY
Secretary
Department of Health

1. Objectives

The objective of the Project is to upgrade the functions of Provincial Hospitals by improving their physical conditions through redevelopment and renovation of buildings as well as supply and installations of medical equipment.

2. Project Sites

- (1) Kundiawa Hospital
premises for existing Technical Training School in Kundiawa, Chimbu Province
- (2) Nonga Hospital
area in a compound of Nonga Hospital in Rabaul, East New Britain Province
- (3) Madang Hospital
area in a compound of Madang Hospital in Madang, Madang Province
- (4) Wabag Hospital
athletic field located nearby the provincial government office in Wabag, Enga Province
- (5) Kerema Hospital
area in a compound of Kereme Hospital in Kerema, Gulf Province
- (6) Daru Hospital
area in a compound of Daru Hospital in Daru, Western Province
- (7) Vanimo Hospital
area in a compound of Vanimo Hospital in Vanimo, West Sepik Province

The map of the above sites are shown in ANNEX I

3. Excuting Agency

The Department of Health (DOH) is responsible for the administration of the Project.

4. Priority of necessary items for the realization of the Project requested by the Government of Papua New Guinea

As a result of discussions between the Basic Design Study Team and the Papua New Guinean side, the priority of provincial hospitals and their facilities to be improved by Japanese Grant Aid was set as shown in ANNEX II. The final components and scale of the Project will be decided by the Japanese side based on the priority lists, after further studies in Japan.

5. Grant Aid System extended by the Government of Japan

- (1) The Government of Papua New Guinea has understood the system of Japanese Grant Aid explained by the Japanese Team.
- (2) The Government of Papua New Guinea will take the necessary measures described in ANNEX III, for smooth implementation of the Project under the condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

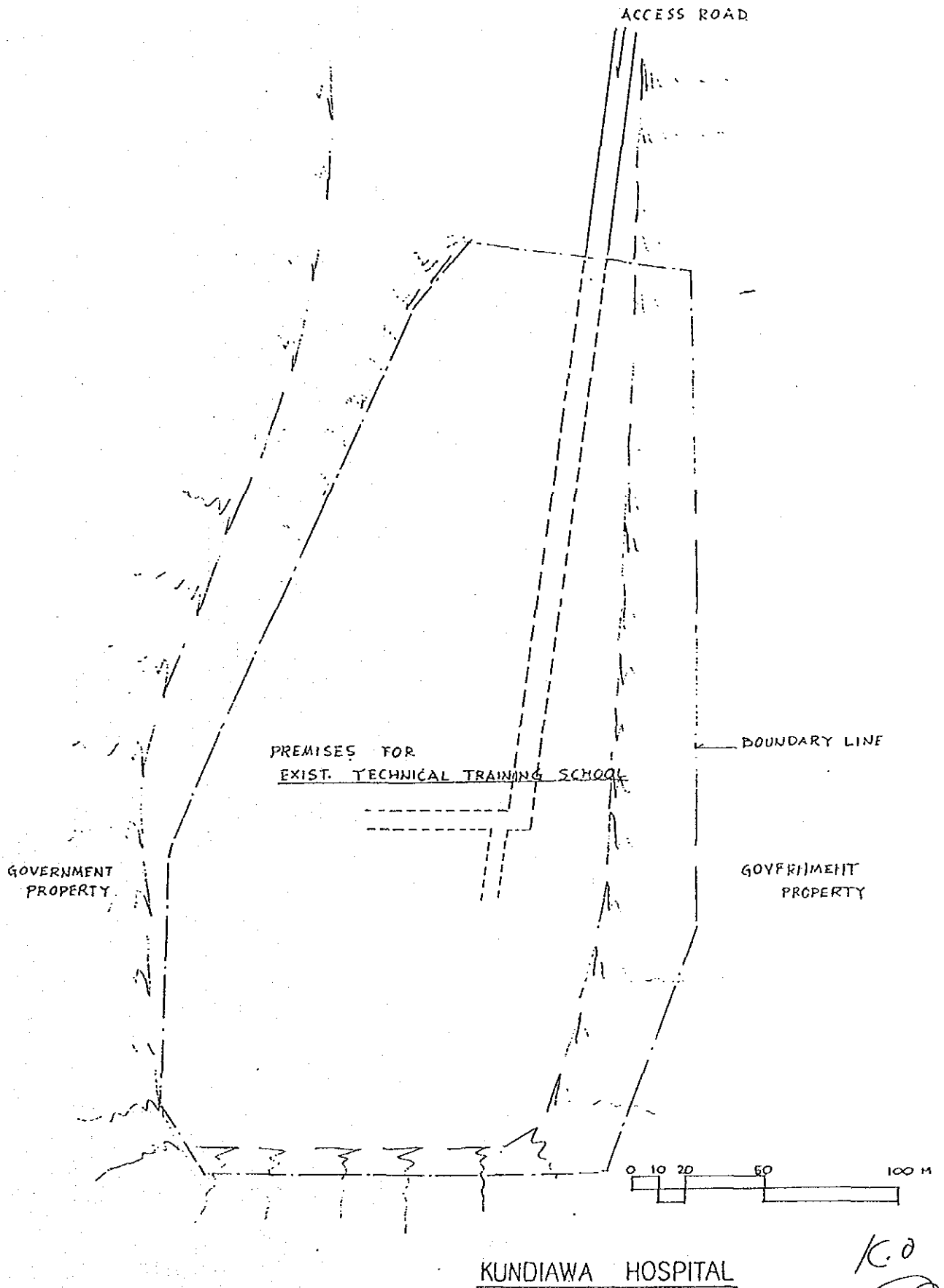
6. Schedule of the Study

- (1) JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around the end of May, 1991.
- (2) In case that the contents of the report is accepted in principle by the Papua New Guinean side, JICA will complete the final report and send it to the Government of Papua New Guinea by the end of August, 1991.

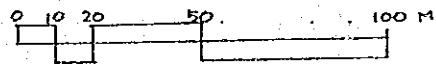
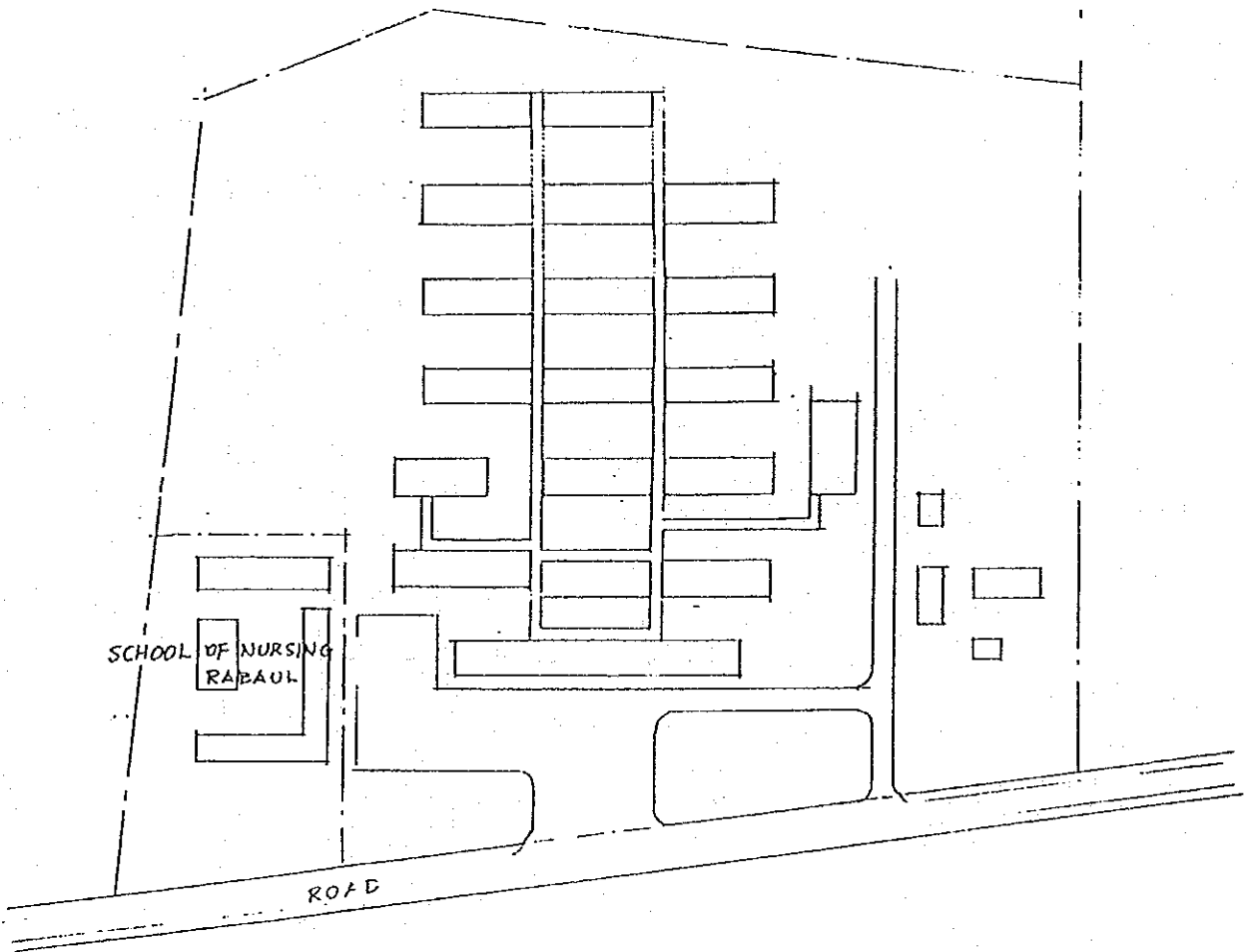
K.O
D
R

ANNEX I MAP OF THE PROJECT SITES

ANNEX I -(1)



ANNEX I -(2)

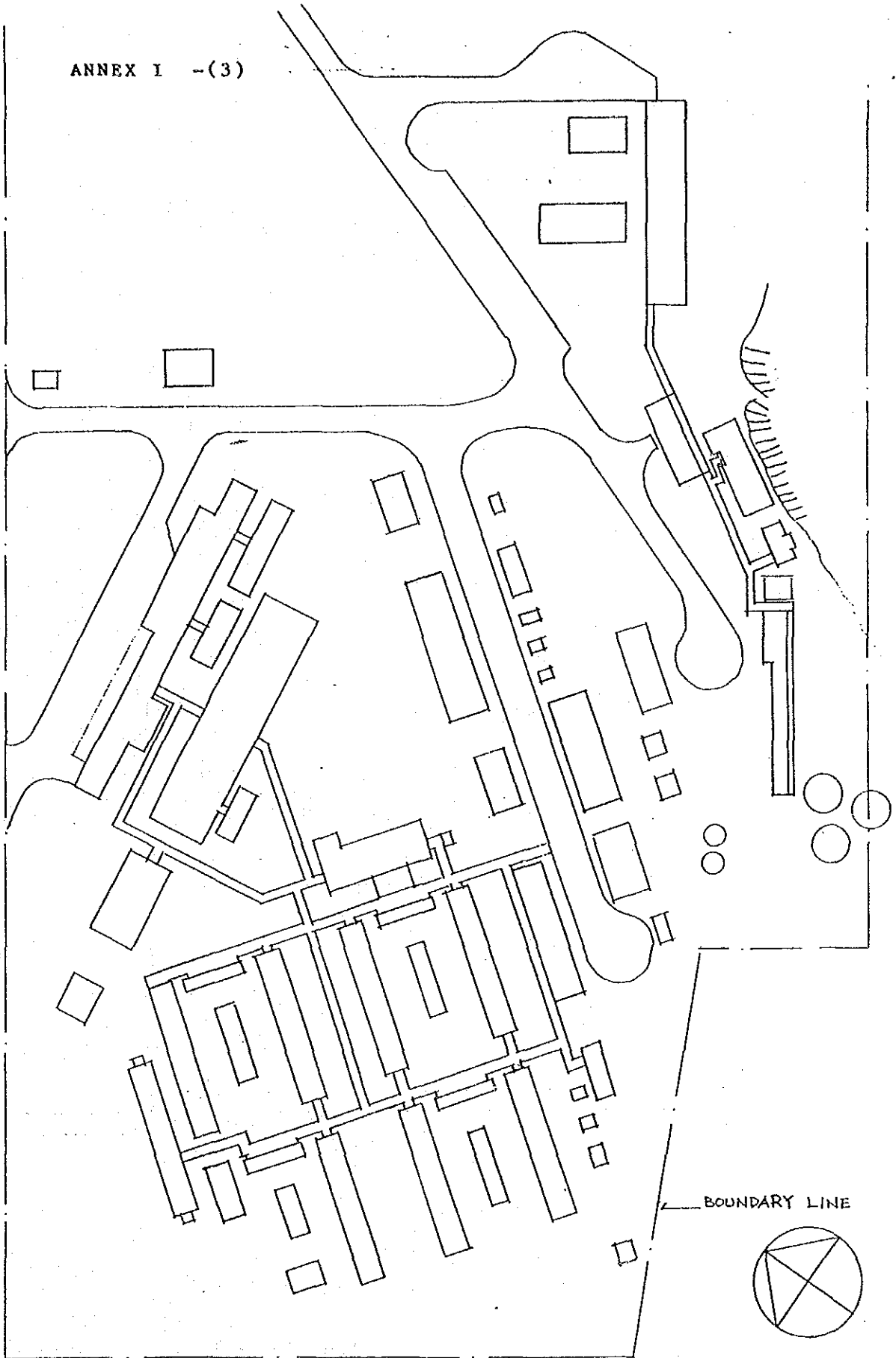


NONGA HOSPITAL

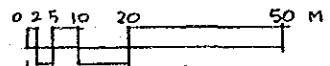
EO
RS

ANNEX I -(3)

MODILON ROAD

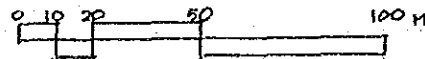
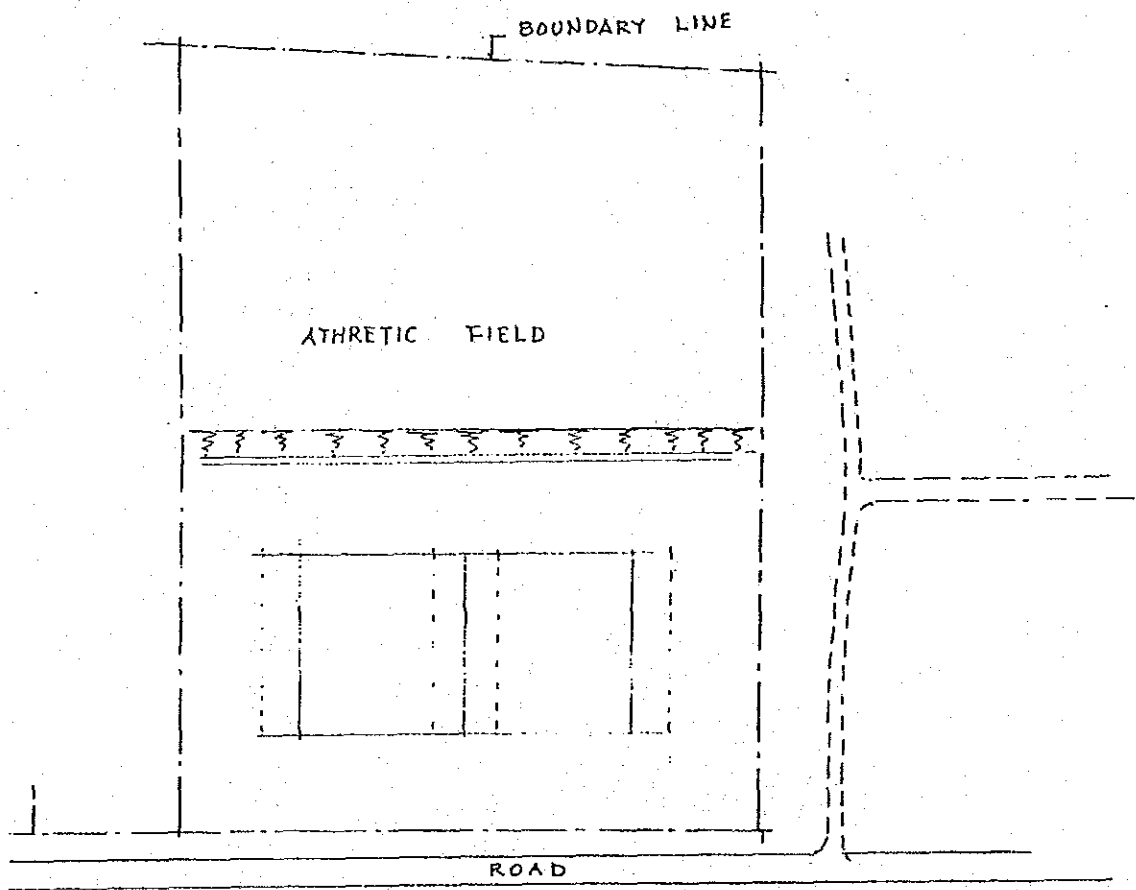


BOUNDARY LINE



K.O

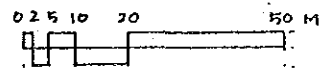
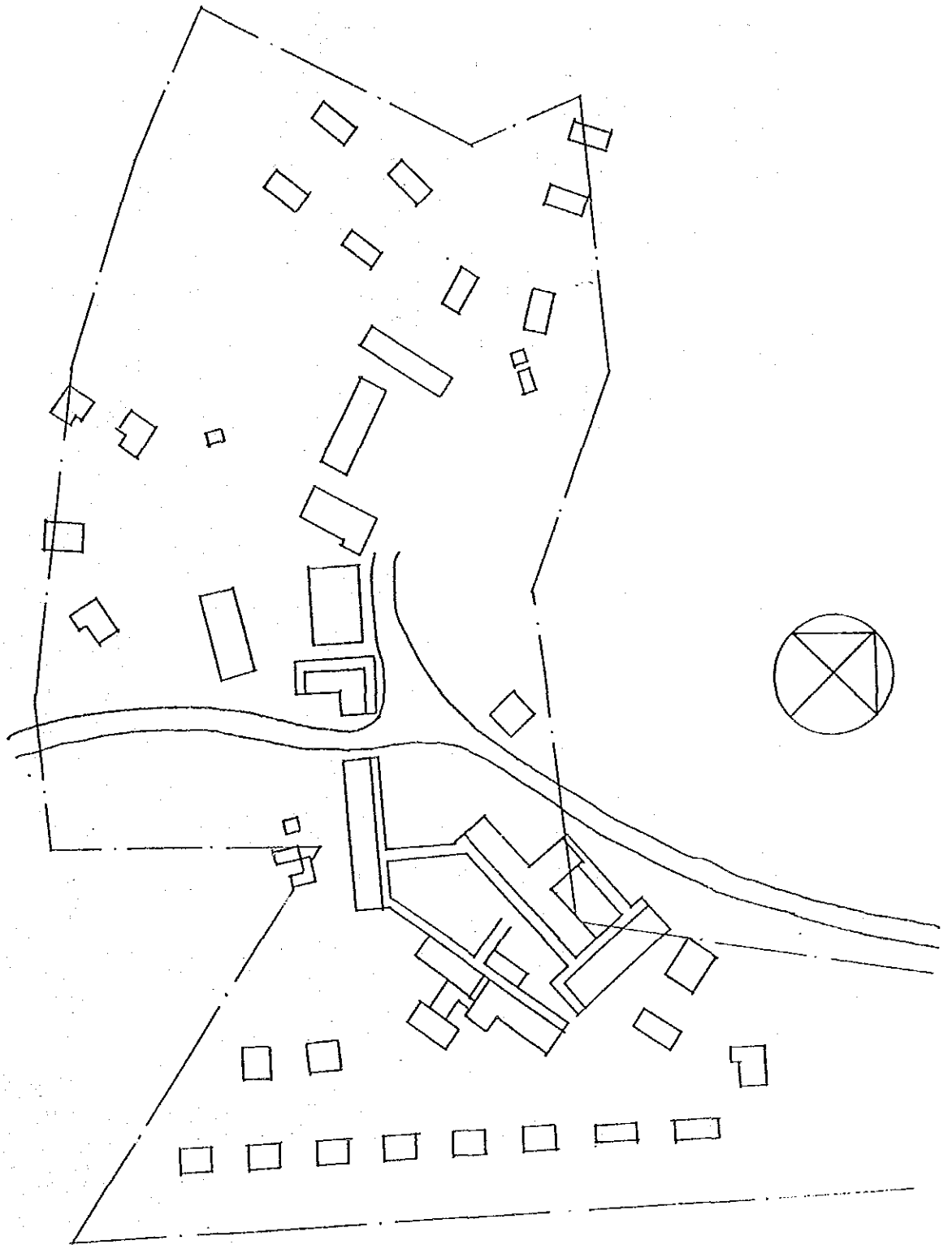
ANNEX I --(4)



WABAG HOSPITAL

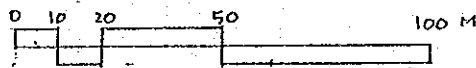
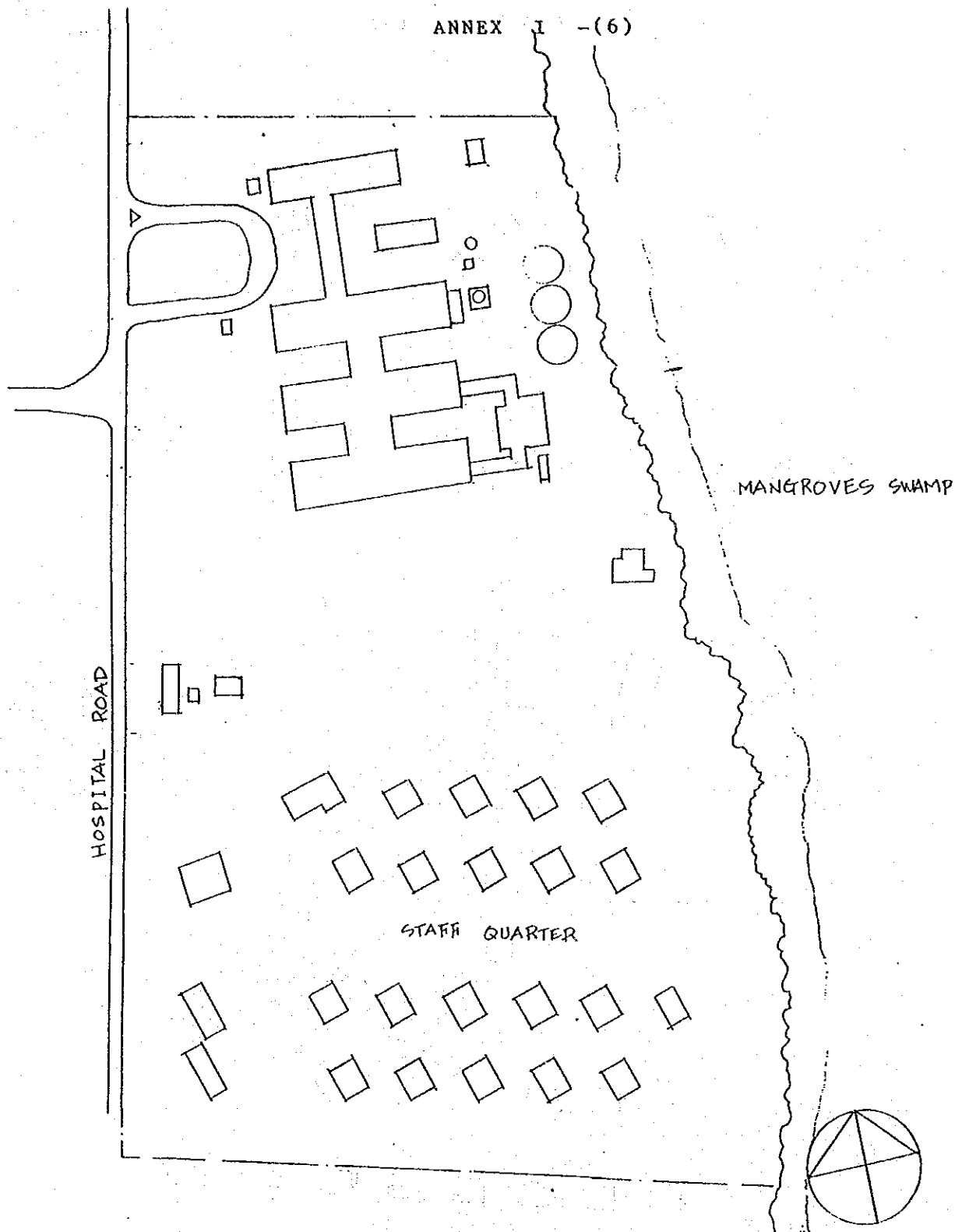
K.O
D

ANNEX I -(5)



217 KEREMA HOSPITAL

K.O
D.S

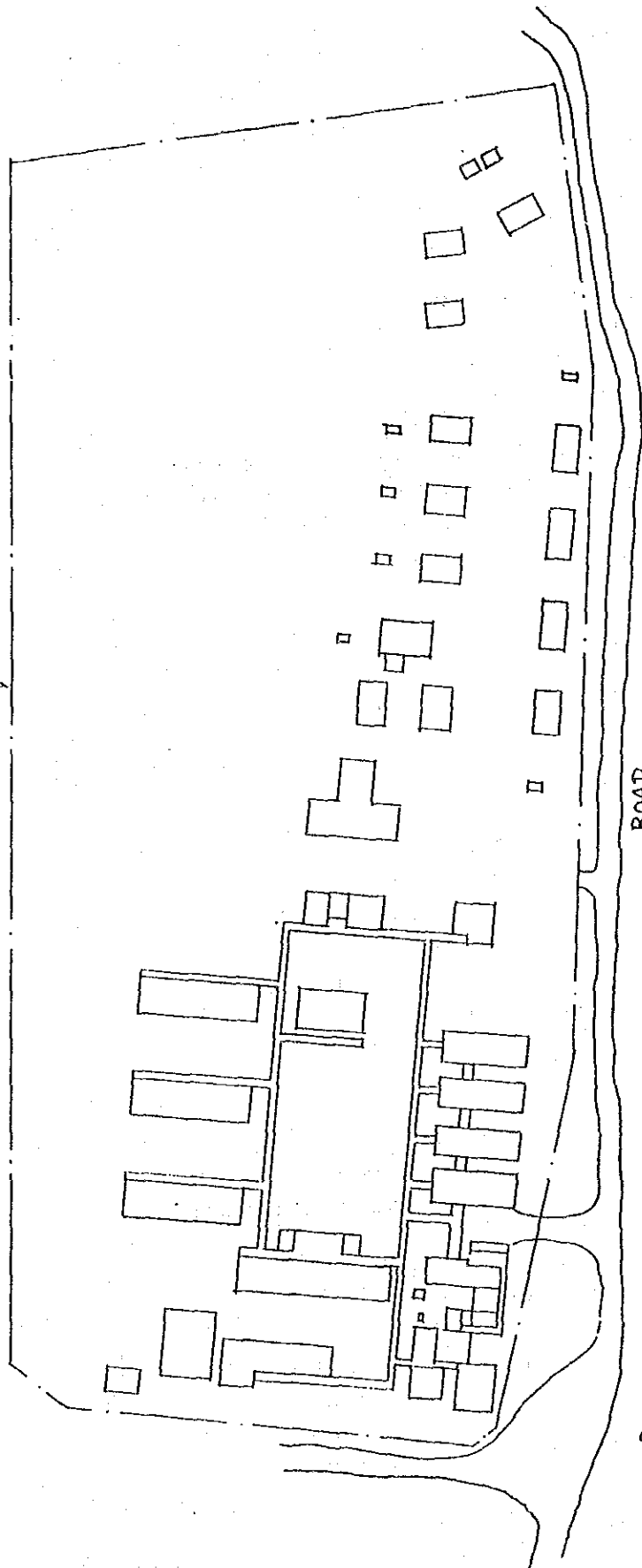


218 DARU HOSPITAL

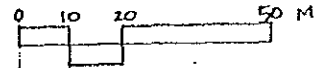
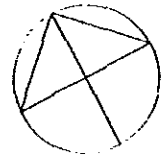
K.C.

ANNEX I -(7)

BOUNDARY LINE →



ROAD



219 VANIMO HOSPITAL

K.O

ANNEX II - (1)

The priority of the provincial hospitals and their facilities

Priority 1

(1) Kundiawa provincial hospital (level 1)

Wards
Labour ward
Operating theatre
Central sterilizing unit
Administration
Kitchen & mess
Outpatient department
Site works - pedestrian entrance
 - covered access ramp
 - service road

Mortuary
Ambulance
Incinerator
Intermediate ward
Laundry
Workshop
Kiosk
Other functions

(2) Nonga base hospital

General outpatient department
Paediatric outpatient department
Emergency casualty
Special clinic
Dispensary
Dental clinic
X-ray
Pathology
Intensive care unit
Support services - morgue
 - sterilizing dept.

Blood bank
Obstetric & gynecology
Special care nursery
Wards
Service facilities - kitchen
 - laundry
 - boiler
 - store

FO
Q

ANNEX II-(2)

Priority 2

Madang provincial hospital (level 1)
Outpatient dept.
Pathology dept.
X-ray dept.
Drainage system
Dispensary
Administration - reception, accountant, medical
records and telephone system
Labour ward
Full nursing ward

Priority 3

- (1) Wabag new provincial hospital (level 2)
Wards
Labour ward
Operation theatre with sterilizing dept.
Radiology
Pathology
Dispensary
Mortuary
Administration including medical records
Kitchen & mess
Laundry
Stores
Workshop
Training facilities
Community service unit
Stand-by generator
- (2) Kerema provincial hospital (level 2)
Wards
Labour
Radiology
Pathology
Blood Bank
Outpatients
MCH clinic
Laundry
Ablution block
Site works - covered way
- water supply
- water reticulation system

ANNEX II - (3)

(3) Daru provincial hospital (level 2)

Administration
Radiology
Pathology
Ablution
OPD & dental clinic
Wards
Site works - water supply
 - sewerage
 - drainage
 - electrical supply
Waste disposal system
Fire detection system
Accommodations

(4) Vanimo provincial hospital (level 2)

Wards
Labour wards
Operation theatre
Radiology
Sterilizing
Pathology
Blood bank
MCH clinic
Dental clinic
Administration
Medical records
Mortuary
Workshop
Incinerator
Site works - covered ways
 - water supply
Ablution block

CO
D

ANNEX III

Major undertakings to be taken by the Government of Papua New Guinea

1. To secure sites for the Project.
2. To demolish, clear and level sites prior to the commencement of construction.
3. To undertake incidental outdoor works, such as fencing, gates and exterior lighting in and around sites, if necessary.
4. To construct access roads to sites prior to the commencement of construction, if necessary.
5. To provide facilities for the distribution of electricity, water supplies, telephones, drainage and other incidental facilities to the Project included for use in construction.
6. To bear commissions to the Japanese foreign exchange bank for banking services based on the Banking Agreement.
7. To ensure the necessary budget and personnel for proper and effective operation and maintenance of the facilities and equipment provided by the Grant Aid.
8. To ensure prompt unloading, tax exemption, customs clearance at port of disembarkation in PNG and prompt internal transportation of materials and equipment provided under the Grant Aid.
9. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in PNG with respect to supply of products and services for the Project.
10. To accord Japanese nationals whose services may be required in connection with supply of products and services under verified contract such facilities as may be necessary for their entry into PNG and stay for the performance of their work.
11. To properly maintain and use the facilities and equipment provided under the Grant Aid.
12. To bear all expenses other than those to be borne by the Grant Aid, necessary for the construction of the facilities, as well as for transportation and installation of the equipment.

4-2 Draft Report Explanation

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON
THE PROVINCIAL HOSPITALS REDEVELOPMENT PROJECT PHASE II
IN
PAPUA NEW GUINEA
(CONSULTATION ON DRAFT REPORT)

In January 1991, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study team on the Project for the Provincial Hospitals Redevelopment Phase II (hereinafter referred to as "the Project") to Papua New Guinea and has prepared the draft report of the study, through discussions with the officials concerned of the Government of Papua New Guinea, the field survey on the Project site, and technical examination of the results in Japan.

In order to explain the components of the draft report to the Government of Papua New Guinea as well as to consult with the Papua New Guinea side on the contents of the report, JICA sent a study team to Papua New Guinea headed by Dr. Ken OKAMOTO, Director, the Second Tokyo National Hospital.

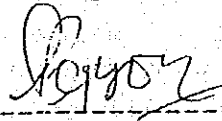
The team commenced its study in Port Moresby and Madang from June 18th and will terminate on June 28th 1991.

As a result of the discussions, both parties confirmed the main items as described on the attached sheets.

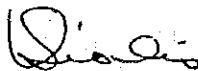
Port Moresby, June 27th, 1991



Dr Ken OKAMOTO
Leader
Draft Report Study Team
JICA



Mr Gabriel PEPSON
Director, O.I.D.A.
Department of Finance
and Planning



Dr Levi SIALIS
Acting Secretary
Department of Health

Annex I: Necessary measures to be taken by the Government of Papua New Guinea, in case Japan's Aid is executed, are as follows.

1. To secure the site(s) for the Project.
2. To demolish the existing buildings and to clear, level and reclaim the site(s) prior to commencement of the construction.
3. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting in and around the site(s).
4. To construct the access road(s) to the site(s) prior to commencement of the construction.
5. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage and other incidental facilities to the Project site(s):
 - 1) Electricity distributing line to the site(s).
 - 2) City water distributing main to the site(s).
 - 3) Drainage from city main to the site(s) with necessary measures to facilitate on-site drainage.
 - 4) Telephone trunk line to the main distributing panel of building.
 - 5) General furniture such as carpets, curtains, tables, chairs and others.
6. To bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.
7. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation.
8. To exempt Japanese Nationals from customs duties, internal taxes and the other fiscal levies which may be imposed in Papua New Guinea with respect to supply of products and services for the project.
9. To accord Japanese Nationals whose services may be required in connection with the supply of products and services under the verified contract such facilities as may be necessary for their entry into Papua New Guinea and stay therein for the performance of their work.

10. To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant Aid.
11. To bear all the expenses other than those to be borne by the Grant Aid, necessary for the construction of the facilities as well as for the transportation and the installation of the equipment.
12. To establish a Joint Committee with authority for smooth implementation of the Project during implementation.

Q *W*
X

ATTACHMENT

1. Components of the Draft Report

The Government of Papua New Guinea has agreed in principle to the Basic Design proposed in the Draft Report with minor but appropriate alterations to be incorporated in the Final Report.

2. Japan's Grant Aid System

- (1) The Government of Papua New Guinea has understood the system of Japan's Grant Aid as explained by the team.
- (2) The Government of Papua New Guinea will take the necessary measures described in Annex I, for smooth implementation of the Project on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

3. Further schedule

The team will make the Final Report in accordance with the confirmed items, and send it to the Government of Papua New Guinea by the end of September 1991.

J. V. S.

APPENDIX II HEALTH STATISTICS

GROSS DOMESTIC PRODUCT, GOVERNMENT EXPENDITURES, HEALTH EXPENDITURES AND POPULATION, 1986-1989

	1986	1987	1988	1989 *
1. Gross Domestic Product (K million)	2,516.5	2,763.8	3,030.0	3,186.0
2. Total Government Expenditures (K million)	930.0	845.4	910.1	1,165.0
3. Total Health Expenditures (K million)	87.4	77.9	79.9	90.2
4. Health expenditures as Percentage (%) Gross Domestic Product (GDP)	3.5	2.8	2.6	2.8
5. Health Expenditures as Percentage (%) Government Expenditures	9.4	9.2	8.8	7.7
6. Percentage (%) Increase in Government Expenditures	0.9	-9.1	7.7	28.0
7. Percentage (%) Increase in Health Expenditures	8.0	-10.9	2.6	12.9
8. Percentage (%) Inflation	5.3	3.0	5.4	5.9
9. Citizen Population (' 000s)	3,419	3,498	3,580	3,661
10. Per Capita Health Expenditures	25.56	22.27	22.32	24.64

Source : Case study by Dr. W. Newbrander, WHO, "Hospital Expenditures in Papua New Guinea - Past, Present and Future", 1985

* Calculation Based on :

- (1) Economic Policy, Vol.2, 1990.
- (2) 1989 estimates of Revenue and Expenditure, 31st December, 1989

CITIZEN POPULATION PROJECTIONS BY PROVINCE 1981 - 2000

PROVINCE	GROWTH RATE (%)	BIRTH RATE (%)	1981	1985	1991	1995	2000
WESTERN	2.6	3.8	80,500	89,400	103,900	114,400	128,000
GULF	1.8	3.6	65,000	70,300	78,400	85,000	85,800
CENTRAL	2.1	3.6	118,400	129,900	147,700	161,800	155,800
NAT. CAPITAL	3.9	4.0	117,200	136,800	162,600	178,200	269,500
MILNE BAY	2.7	3.6	131,100	146,500	170,500	187,700	189,200
ORO	2.6	3.7	79,200	88,000	102,300	112,400	118,700
S. HIGHLAND	1.5	3.5	239,100	255,300	283,000	305,300	328,600
ENGA	1.3	3.0	166,500	176,300	192,700	205,500	229,100
W. HIGHLAND	2.1	3.2	269,500	294,200	331,000	357,100	414,100
SIMBU	0.7	2.5	178,400	185,200	193,600	201,200	208,600
E. HIGHLAND	1.8	3.1	279,100	300,800	333,400	357,500	406,400
MOROBE	2.6	3.7	313,100	348,200	403,300	442,500	538,100
MADANG	2.6	3.9	214,900	239,400	283,700	319,800	329,000
EAST SEPIK	2.3	3.8	225,600	249,000	288,800	320,700	346,500
WEST SEPIK	1.9	3.8	116,000	125,800	141,300	153,800	150,100
MANUS	2.3	3.6	26,400	29,100	33,900	37,600	35,400
NEW IRELAND	2.6	3.7	67,300	75,100	88,000	97,900	97,200
E. N. BRITAIN	2.7	3.6	134,200	150,000	176,800	195,100	175,700
W. N. BRITAIN	3.2	4.1	91,400	104,300	125,600	141,800	158,300
N. SOLOMON	3.4	4.0	129,600	149,400	182,300	207,800	204,200
TOTAL CITIZEN	2.2	3.5	3,042,500	3,343,000	3,822,800	4,183,100	4,568,300

SOURCE : NATIONAL STATISTICAL OFFICE

Infant Mortality Rate, Child Mortality Rate, Life Expectancy at Birth, Birth Rate & Death Rate
(/1000 Life Births)

PROVINCE	Infant Mortality Rate		Child Mortality Rate		Life Expectancy at Birth		CRUDE BIRTH RATE	CRUDE DEATH RATE
	1971	1980	1971	1980	1971	1980		
PNG TOTAL	134	72	79	42	40.4	49.6	34.2	13.2
WESTERN	129	83	82	49	38.5	47.7	36.5	14.3
GULF	191	71	121	44	29.1	47.3	34.3	14.6
CENTRAL	85	59	56	34	43.7	51.3	34.0	13.4
N. C. D.		35	56	20		56.7	37.7	6.9
MILNE BAY	98	50	61	25	43.0	57.1	35.0	9.4
ORO	94	67	62	40	42.3	49.2	34.9	13.6
S. HIGHLAND	159	116	93	66	36.8	43.8	36.7	17.6
ENGA		91	83	53		47.1	39.0	15.8
W. HIGHLAND	153	81	83	42	40.5	51.9	32.3	12.7
SIMBU	149	87	77	47	43.3	50.2	26.1	15.9
E. HIGHLAND	141	55	73	32	44.3	53.1	31.1	12.5
MOROBE	123	62	71	37	42.7	50.9	35.2	12.5
MADANG	122	62	76	37	40.2	50.7	37.2	12.7
EAST SEPIK	183	94	107	50	32.8	49.3	36.2	13.9
WEST SEPIK	143	104	90	66	36.5	42.1	38.1	18.9
MANUS	86	55	56	32	43.7	51.8	31.6	11.5
NWE IRELAND	74	62	48	34	45.9	52.7	33.6	12.8
E. N. BRITAIN	77	57	47	32	47.1	52.8	33.4	10.8
W. N. BRITAIN	88	60	56	35	44.3	51.3	37.8	11.6
N. SOLOMON	83	33	50	17	46.9	59.6	36.4	7.9

Source : Hand Book Health Statistics PNG 1989

PAPUA NEW GUINEA
COMPARISON OF HEALTH FACILITY / POPULATION COVERAGE BY PROVINCE AS AT 31/12/89

PROVINCE	CITIZEN POPULATION		HOSPITALS		HEALTH CENTRES		HEALTH SUB CENTRES		URBAN CLINICS		AIDPOSTS		POPULATION / BED RATIO FOR HOSP. BEDS TOTAL BEDS	
			NO	BEDS	NO	BEDS	NO	BEDS	NO	BEDS	NO			
WESTERN	99,100		1	81	13	152	16	53	1	96	1,223	347		
GULF	75,700		1	83	9	248	10	54	1	35	912	197		
CENTRAL	141,800		0	0	8	192	18	90	0	128	0	503		
NAT. CAPITAL	154,800		1	625	0	0	1	0	15	2	222	223		
MILNE BAY	162,800		1	163	10	286	28	333	1	119	999	208		
ORO	97,600		1	160	5	101	12	71	0	70	610	294		
S. HIGHLAND	273,100		1	217	12	525	32	329	1	220	1,259	255		
ENGA	186,600		1	100	10	552	11	142	0	135	1,866	235		
W. HIGHLAND	318,900		1	250	12	407	8	228	1	122	1,276	360		
CHIMBU	190,700		1	250	7	315	11	173	0	98	763	258		
E. HIGHLAND	323,000		1	360	7	310	22	281	1	132	857	340		
MOROBE	385,000		1	500	17	587	8	67	7	275	770	334		
MADANG	267,500		1	380	19	1,117	10	67	2	175	704	171		
EAST SEPIK	275,100		1	320	12	488	15	95	1	235	860	305		
WEST SEPIK	136,000		1	110	10	509	20	150	1	132	1,236	177		
MANUS	32,300		1	85	8	90	0	0	0	56	380	185		
NEW IRELAND	83,700		1	123	8	442	18	164	1	75	680	114		
E. N. BRITAIN	167,800		1	480	10	478	10	184	1	29	650	147		
W. N. BRITAIN	118,400		1	160	9	262	11	330	1	78	740	157		
N. SOLOMON	171,100		1	250	9	455	17	311	1	92	684	168		
TOTAL	3,661,000		19	4,697	195	7,516	278	3,122	36	2,304	768	238		

SOURCE : DEPARTMENT OF HEALTH (SURVEY BY PLANNING DIVISION).

LEADING CAUSES OF MORBIDITY - PAPUA NEW GUINEA 1989

No.	DISEASE / CAUSES	NO. OF CASES	PERCENTAGE TO TOTAL CASES
1	Normal deliveries (incl. BBA)	47,773	19.2
2	Pneumonia	34,752	13.9
3	Other types of Malaria	26,604	10.7
4	Diseases of skin and subcutaneous tissue	12,337	4.9
5	Ill-defined interstitial infections	9,933	4.0
6	Open wounds and injury to blood vessels	6,866	2.8
7	Direct obstetric causes	6,827	2.7
8	Diseases of the musculoskeletal system and connective tissue	6,181	2.5
9	Disease of female genital organs	6,114	2.5
10	Anaemias	5,820	2.3
11	Certain conditions originating in the perinatal period	5,449	2.2
12	Bronchitis, chronic and unspecified, emphysema and asthma	5,254	2.1
13	Diseases of other parts of the digestive system	4,945	2.0
14	Other reasons for contact with health services	4,885	2.0
15	Fractures	4,477	1.8
16	Typhoid Fever	4,457	1.8
17	Signs, symptoms and ill-defined conditions	4,234	1.7
18	Tuberculosis	3,630	1.5
19	Other injuries, early complication of trauma	3,616	1.4
20	Abortion	3,147	1.3
21	All other causes	42,118	16.9
TOTAL		249,419	100.0

Note : Daru and Mendi Hospitals did not report for 1989.

LEADING CAUSES OF MORBIDITY - PAPUA NEW GUINEA 1989

No.	DISEASE / CAUSES	NO. OF CASES	PERCENTAGE TO TOTAL CASES
1	Pneumonia	1,327	23.9
2	Certain conditions originating in the perinatal period	596	10.7
3	Meningitis	338	6.1
4	Cerebral Malaria	241	4.3
5	Tuberculosis	231	4.2
6	Ill-defined interstitial infections	228	4.1
7	Diseases of pulmonary circulation and other forms of heart disease	220	4.0
8	Other types of Malaria	194	3.5
9	Septicaemia	177	3.2
10	Diseases of other parts of the digestive system	176	3.2
11	Other diseases of respiratory system	140	2.5
12	Anaemias	136	2.4
13	Typhoid Fever	136	2.4
14	Signs, symptoms and ill-defined conditions	105	1.9
15	Measles	101	1.8
16	Other malignant neoplasm of digestive organs and peritoneum	93	1.7
17	Bronchitis, chronic and unspecified, emphysema and asthma	85	1.5
18	Diseases of urinary system	76	1.4
19	Nutritional deficiencies	63	1.1
20	Other diseases of the nervous system	49	0.9
21	All other causes	842	15.2
TOTAL		5,554	100.0

Note : Daru and Mendi Hospitals did not submit their 1989 reports.

JICA