

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR
IMPROVEMENT OF RURAL HEALTH CARE FACILITIES
IN
THE REPUBLIC OF MALAWI

October 2006

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

KUME SEKKEI Co., Ltd. / EARL Consultants Inc.

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PREFACE

In response to a request from the Government of the Republic of Malawi, the Government of Japan decided to conduct a basic design study on the Project for Improvement of Rural Health Care Facilities in the Republic of Malawi and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Malawi a study team from February 27 to March 25, 2006.

The team held discussions with the officials concerned of the Government of Malawi, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Malawi in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Malawi for their close cooperation extended to the teams.

October, 2006

Masafumi KUROKI

Vice-President

Japan International Cooperation Agency

October, 2006

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of Rural Health Care Facilities in the Republic of Malawi.

This study was conducted by the Consortium of KUME SEKKEI Co., Ltd. and EARL consultants Inc. under a contract to JICA, during the period from February to October, 2006. In conducting the study, we have examined the feasibility and rational of the project with due consideration to the present situation of Malawi and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Osamu HAMANO

Project Manager,

The Basic Design Study Team for the Project
of Improvement of Rural Health Care

Facilities in the Republic of Malawi,

The Consortium of Kume Sekkei Co., Ltd. and
EARL Consultants Inc.

Summary

The Republic of Malawi (hereinafter referred to as Malawi) is situated in the south-eastern part of the African Continent and shares borders with Tanzania, Mozambique and Zambia and covers an area of 118,486 square kilometres (around the size of Hokkaido and Kyushu combined), and Lake Malawi covers 20.6% of it. It has a population of 12,100,000 (in 2003 according to the World Bank) and more than 50% of the population live in the southern part of Malawi while only 12% population live in the north. The climate is tropical savannah and the weather differs according to the altitude and distance from Lake Malawi. The dry season lasts from May to August and its average temperature is 22.2°C, while the rainy season good for agriculture lasts from October to April and its average temperature is 26.7°C.

Industrial composition of Malawi is 39% agriculture, 17% manufacturing industry and 44% services (in 2004 according to the World Bank). Around 85% of the working population are employed in agriculture and agriculture-related industries. Agricultural products like tobacco, tea and sugar occupy 80% of export goods, and national incomes depends on fluctuation of international prices of these agricultural products and this causes a weak economical structure. GNI per capita is as low as US\$170 (in 2004 according to the World Bank), and Malawi's effort to promote socio economic reform targets democratisation and poverty reduction by structural reform supported by World Bank and IMF.

The population growth rate of is 2.2 and average life expectancy at birth in Malawi is low at 38 years (the average figure for the Sub-Saharan region is 46.2 years); the infant mortality rate is 109.8 per 1,000 births (the same average is 100.5 per 1,000 births); and the infant mortality rate under five years of age is 178 per 1,000 (the same average is 175 per 1,000); accordingly, the public health situation is by no means good (in 2004 according to the World Bank). Moreover, the maternal mortality rate is high at 1,800 per 100,000 births (UNDP corrected value, 2000) and the total peculiar birth rate is still 6.1 (2000~2005, UNDP), indicating that pregnant women are giving birth in dangerous conditions. Concerning HIV/AIDS, Malawi had an estimated HIV/AIDS prevalence of 14.2% (age 15 – 49) at the end of 2003 (this figure is double compared to average of Sub-Saharan region) and an estimated 0.94 million adults and children from the age of 0 – 49 were HIV/AIDS positive in 2004. There are approximately 110,000 new HIV infections each year. AIDS is the leading cause of death in Malawian adults who are productive workers, with more than 80,000 deaths annually and approximately 550,000 children have lost parents to AIDS. Thus HIV/AIDS is spread all over Malawi.

In an effort to improve the public health and medical care situation in the country, the Government of Malawi in 1997 implemented a national survey of the current state of health and medical care facilities, and the findings of this were incorporated into a geographical information system under the Japan International Cooperation Agency (JICA) development study, the “Primary Health Care Strengthening Plan” in 1998. In the National Mapping Survey of Health Facilities that

was carried out in 2002 as a JICA overseas fundamental survey, basic information was renewed for 617 facilities out of 2,850 health facilities including private sector facilities in the country. The findings of these survey activities pointed to the following reasons for the poor state of public health and medical care: shortages of medical facilities and equipment, shortages of health and medical care workers, and regional disparities in the level of services, in particular, poor access to facilities and low standard of medical care services in rural areas.

In order to improve this situation, based on the Poverty Reduction Strategy Paper (PRSP), the Government of Malawi included the Essential Health Package (EHP), geared to providing equal health and medical care services for all people including residents of rural villages and people living in poverty, in the Fourth National Health Plan (1999~2004) and committed to providing health and medical care services based on the district level. However it got delayed from the targeted accomplishment because it needs huge budget to cover many facilities and spread all over the nation. Some work was implemented under the Local Medical Care Improvement Project under the support of the Africa Development Bank. In this, improvements were carried out at 20 health centres in the central and southern part of the country from 2001. However, support from other donors has not been forthcoming and facilities that are capable of providing basic health and medical care services as prescribed by the EHP currently account for around only 10% of the total.

The original request from the Government of Malawi targeted approximately 540 facilities scattered over the whole country in 28 districts. The types of facilities included covered a wide range of levels from central hospitals to facilities below the district level, and some private sector facilities were included. Accordingly, upon deeming it necessary to narrow down the contents, scope and scale of the assistance in order to ensure the effect of the project, the preliminary study was implemented in October 2005. At the stage of the preliminary study, due to the need to narrow down the contents, scope and scale of the assistance, screening based on the following kinds of criteria: 1) districts that contain high numbers of socially disadvantaged people that require EHP, 2) districts where the health and medical care situation is relatively poor and there is urgent need to improve health and medical care facilities, and 3) districts where the optimum and maximum effect of assistance can be anticipated through collaboration and synergy with technical. As a result, the Malawian side narrowed down the target areas of the request to four districts, i.e. Rumphu and Mzimba Districts in the north of the country, and Kasungu and Lilongwe Districts in the center). As for the target facilities, it was agreed to narrow down to public facilities that play a central and focal role in the practice of EHP and are heavily used by residents. In specific terms, the target facilities were narrowed down to district hospitals and health centres. Since there are numerous health centres in each area, it was necessary to further narrow the facilities down when selecting specific targets. Because it was confirmed as desirable to select facilities that currently provide health and medical care services and where the operation and maintenance of facilities is possible in order to realize the project effect, it was agreed to select existing health centres that are permanently assigned with the standard level of staffing, i.e. enrolled nurses and enrolled midwives. Regarding equipment, upon

confirming that it is appropriate to procure basic and essential equipment for target facilities and that Malawi has a list of recommended EHP equipment, basic items of equipment were requested according to the said list.

In response to the request, the Government of Japan made the decision to implement the Basic Design Study and consigned JICA to dispatch the Basic Design Study Team in February 2006. Upon conducting site surveys and holding discussions with the MOH and related persons, the following components of the request were confirmed: 1) concerning district hospitals: construction of six wards in three district hospitals (construction of paediatric wards and maternity wards at Rumphi, Mzimba and Kasungu District Hospitals) and procurement of equipment (beds and bedside tables) in line with said construction; 2) concerning health centres, a) rebuilding of dispensariess and maternity and procurement of EHP recommended equipment at 16 health centres in four districts; and b) procurement of EHP recommended equipment at 56 health centres in four districts (including those targeted for construction of facilities).

The Study Team implemented survey of all facilities based on this request. During this work, the team held discussions with officials on the Malawian side, surveyed related facilities and collected necessary data. Following further analysis in Japan, the Study Team held explanations in Malawi on the Draft Basic Design Report in August 2006, it compiled the Basic Design Study Report.

Table: Outline of the Analysis of the B/D data

Building	Targeted District and Type of the Building		Priority for construction			Medical Equipment	
			A	B	C	A	C
District Hospital	Rumphi	Paediatric Ward	1	—	—	1	—
		Maternity Ward	1	—	—	1	—
	Mzimba	Paediatric Ward	1	—	—	1	—
		Maternity Ward	—	—	1	—	1
	Kasungu	Paediatric Ward	—	—	1	—	1
		Maternity Ward	—	—	1	—	1
Sub Total			3	—	3	3	3
HC	Rumphi		2	0	1	7	1 *1
	Mzimba		3	1	1	35	—
	Kasungu		2	3	—	11	—
	Lilongwe		2	1	—	3	—
Sub Total			9	5	2	55	1
Building Construction and Providing Medical Equipment			17		5	58	1

Priority A: Essential, B: Necessary, C: Least Feasible

*1: No diagnostic activity

The Project, conducted under the Government of Japan's Grant Aid scheme, aims to construct two district hospitals (paediatric ward and maternity ward construction) and 14 health centres (dispensary and maternity construction) and to supply medical equipment to 58 facilities including the above district hospitals and health centres in the northern part (Rumphi and Mzimba Districts) and central part (Kasungu and Lilongwe Districts) of the country, in order to promote dissemination of the Ministry of Health's EHP with the objective of enhancing the quality of health and medical care services in the country.

Components of the buildings and medical equipment are as follows.

< Structure and floor areas of planned facilities >

Name of Facility	Structure	Contents	Floor Area(m ²)
Rumphi District Hospital Paediatric Ward	<ul style="list-style-type: none"> • Reinforced Concrete Block • Single story 	1 Building, (Inc. Roofed Corridor)	388.05
Rumphi District Hospital Maternity Ward		1 Building, (Inc. Roofed Corridor)	420.95
Mzimba District Hospital Paediatric Ward		1 Building, (Inc. Roofed Corridor)	337.91
Health Center Maternity		7 Buildings, (1 Building 194.37 m ²)	1,360.59
Health Center Dispensary		7 Buildings, (1 Building 197.70 m ²)	1,383.90
		Total Floor Area	3,891.40

< Components of the planned facilities (District Hospital) >

Building Name	Department	Contents
Paediatric Ward (2 Buildings)	Inpatients	Ward (Nutrition Rehabilitation, Surgical, Serious case) , Observation, Nurse Station, Kitchen, Drug store, Toilet and Shower for patients and common.
Maternity Ward (1 Building)	Delivery	Labour/Delivery Rm., Nursery, Sluice, Shower & Toilet
	Inpatients	Ward (Surgical Operation, Complicated Delivery, Normal Delivery) ,Nurse station, Toilet & shower

(Health Center)

Building Name	Department	Contents
Dispensary (7 Buildings)	Diagnostic	Examination Rm, Treatment Rm, Dressing Rm, Drug Store
	Waiting & Reception	Waiting Area, Office & Reception, Waiting Rm (Male/Female), Storage
	Supporting EHP practice	VCT Waiting Rm., VCT Consultation, Family Planning
Maternity (7 Buildings)	Diagnostic	Examination Rm.
	Delivery	Labour/Delivery Rm, Shower
	Inpatients	Ward (Ante-Natal, Post-Natal), Shower
	Supporting EHP practice	VCT Waiting Rm., VCT Consultation

<Major medical equipment and usage >

Building	Name of equipment	Usage	Quantity
District Hospital (Paediatric and Maternity Ward)	Hospital beds	Beds for inpatients	84pieces
	Bedsides Lockers	Lockers for inpatients.	84pieces
Health Center (Dispensary)	Diagnostic equipment	Diagnostic for ENT (Ear, Nose and Throat) and , internal medical clinic.	49sets
	Minor surgical sets	To be used as instrument for foreign body removal and drainage incision for dispensary.	157sets
	Instrument sets	To be used as instrument to make a surgical treatment in dispensary, mainly for suturing and stitch removal.	108sets
Health Center (Maternity)	Delivery beds	To be used as an item for pregnant women to delivery on it.	52pieces
	Resuscitators (Manual)	Items to restore spontaneous breathing of wound patients, who falls dyspnea.	47sets
	Instrument sets (Delivery & suturing)	Essential instruments for treatment of normal delivery.	130sets
	Solar system for night time delivery	Lighting source for an examination light for night time delivery.	52pieces
	Hospital beds	Beds for ant-natal and post-natal inpatients.	148pices
	Bedside lockers	Lockers for ant-natal and post-natal inpatients.	249pices

In the event where the Project is implemented under the Grant Aid Scheme of the Government of Japan, the overall Project implementation period will be 15 months, comprising 5 months for detail design and tender procedure and 10 months for the construction work. As for the total Project cost,

this will be approximately 793 million yen, comprising 725 million yen as the Japanese government portion and 68 million yen as the Malawian government portion.

The responsible agency for the Project is the Ministry of Health and the implementing agency is the Planning and Policy Department in the Ministry. District Health Officers, who have jurisdiction over district hospitals and health centres, shall conduct operation and maintenance and control the budget and allocation of the manpower in the Districts.

Estimation of the additional annual operation cost and maintenance cost including spare parts and consumable items incurred by this Project is 2,333,000MK (¥2,100,000). Since maintenance costs are issued from the budget for other recurrent costs, the ratio of the increase in this item was calculated from other recurrent expenses in 2004/05. As a result, it works out that maintenance costs in the first five years after completion increase by 5.6% in Rumphi District Hospital, 2.1% in Mzimba District Hospital, 0.4% in Kasungu District Hospital and nearly zero in Lilongwe District Hospital. Since the operating budget steadily increases for each district hospital every year, and the ratio of the additional cost against the yearly budget is minimal, and there is no necessity of difficult maintenance and high maintenance cost because most of the medical equipments procured by this Project are very simple and common types, it is deemed the there will be no problem in terms of the budget for maintenance and operation in this Project.

The implementation of the Project is expected to have following direct effects.

(1) Direct effects

1) District Hospitals

- ① Inpatients capacity in pediatric and maternity wards will be increased greatly by construction of pediatric and maternity wards.
- ② By the construction of maternity ward and procurement of medical equipment, number of labor beds and delivery beds will be increased and safe delivery will be possible through using this equipment. Functions of existing maternity wards will become antenatal where pregnant women wait for delivery, while the new maternity wards will be used for post-natal care services only. This will distinguish activities for antenatal and post-natal care services for nurses and mitigate their workload following completion of the Project.
- ③ Wards for non-infectious disease will be set up in construction of new pediatric wards and procurement of medical equipment, and this will make it possible to reduce the risk of infections in hospitals.

2) Health Centers

- ① By the construction of dispensaries and maternity departments and procurement of medical equipment, the medical services environment for diagnostics and treatment will be set up, and

this will make it possible to provide high quality primary health care services to the targeted people.

- ② By the construction of maternity departments and procurement of medical equipment to the health centres, the number of inpatients in the antenatal and post-natal wards will be increased and safe delivery will increase by using this equipment. Night diagnoses, deliveries and lifesaving for pregnant women in the health centres will become possible by installation of solar power generating systems for night lighting. Through improvement of delivery care services in the health centers, the number of normal delivery cases in district hospitals will be reduced by decreasing the number of deliveries in the district hospitals.
- ③ By the construction of outpatient dispensaries and procurement of medical equipment to the health centers, it will possible to increase the number of patients by providing active diagnoses and activities for health education services in the health centers. It is expected that HIV/AIDS preventive activities will be strengthened and familiarized through the establishment of VCT rooms.

The implementation of the Project is expected to have following in-direct effects.

(2) Indirect effects

1) Improvement of Health Index

Through increasing access opportunities to rural health care services through the construction and procurement of medical equipment, this will support the practice of EHP providing medical checkups for mother and child health, vaccination services and so on, and this is expected to improve the health index in Malawi in the future.

2) Mitigation of burden for patients

Improvement of diagnostic and treatment capacity in the rural areas will make it possible to have initial medical treatment in the rural areas, and this will reduce the difficulty in visiting health facilities for patients.

Thus, upon the execution of this project, rural health care services will be improved. The service population of the two district hospital that will have ward extensions is 740,000 (Rumphi District: 150,000, Mzimba District: 590,000), that of the 14 health centres that will have ward extensions is 322,000, and that of the 41 health centres that will have equipment supply is 500,000

The following items are to be improved and managed for the smooth and effective operation of the health care facilities.

(3) Items to be improved and managed

1) Items to be Implemented by the Recipient Country

In implementing these plans, it is necessary for the construction work under the responsibility of

Malawi to be conducted at an appropriate time. It is especially important for the following to be completed before construction work by the Japanese side begins: combing off the surface soil if the site is on farmland, and cutting of trees, disposal of roots and filling in of old toilets at the Rumphu District Hospital.

2) Securing and Training Personnel

Although Malawi educates doctors and nurses at medical colleges and nursing schools, neither are trained to work in sufficient numbers at all 2,850 medical facilities around the country. In addition, because there are only enough doctors to allocate to the Central Hospital, which is a tertiary medical facility, and the district hospitals, which are secondary medical facilities, there are only minimum numbers of medical workers at health centres and health posts. This makes providing 24-hour obstetrics services difficult. This is why the Ministry of Health is currently implementing the "Plan to Increase Health and Medical Workers" and is increasing the number of nurse and midwife candidates at the schools. It is desirable to train medical workers with the proper qualifications and assign the appropriate numbers to regional facilities.

3) Daily Management of Facilities and Equipment

The existing facilities at district hospitals have clean floors and organized equipment and machinery. Conversely, the hospital rooms for patients and their families tend to have dirty walls and the lavatories are also unclean and unhygienic. In other words, the examination rooms and operating rooms that have definite personnel responsible for them are cleaned and maintained on a daily basis, but there are not enough resources for outpatient areas and hospital wardrooms that tend to get dirty. Therefore, it is necessary to develop maintenance and management setups that will be responsible for the cleaning, policing and maintenance control of hospitals overall. Daily cleaning and maintenance will lead to the early detection of problems and prevent malfunctions and damage before they occur.

4) Establishing appropriate number of health care facilities in relation to the service population

Health centres are established according to the basic Ministry of Health criteria of one per 20,000 people in urban areas and one per 10,000 people in rural area. . However, out of the 16 targeted health centres, the Study Team found that only two health centres satisfied these criteria, i.e. RHC-1 Chitimba Health Center with a service area population of 5,000 and MHC-12 Kafukule Health Center with 10,089 from the other 14 health centres had service area populations ranging from 15,000 to 50,000 at KHC-8 Simlemba Health Center , which was found to cater to more than five times its prescribed service population. In order to ensure that the basic health services of health centres do not show disparities according to area and staff numbers, it is desirable to review the current distribution of health centres and allocate appropriate numbers.

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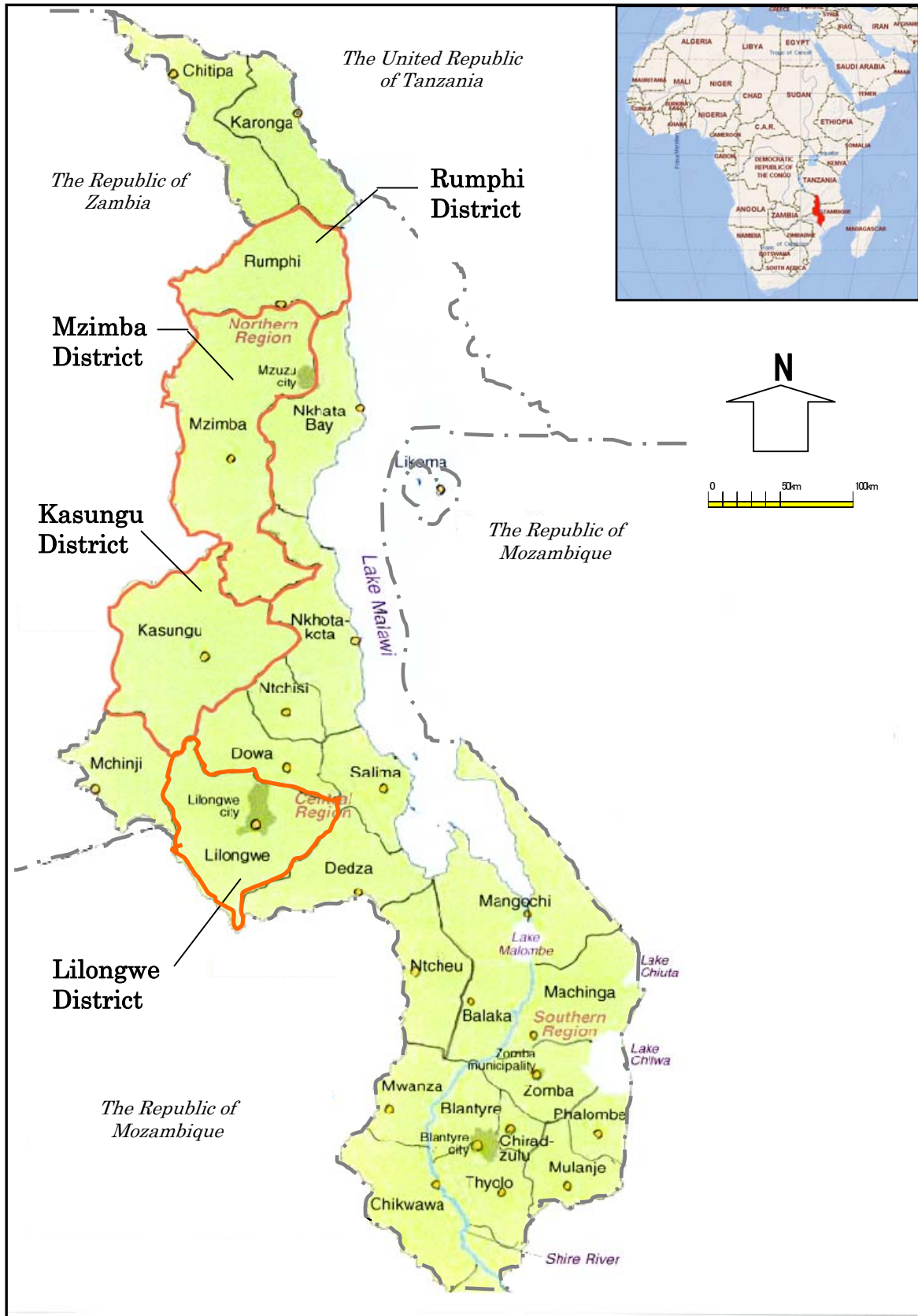
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ABBREVIATIONS

AfDB	African Development Bank
AfDF	African Development Fund
AIDS	Acquired Immuno Deficiency Syndrome
ARI	Acute Respiratory Infections
CDC	Centers for Disease Control and Prevention
CHAM	Christians Hospital Association of Malawi
CIDA	Canadian International Development Agency
DFID	Department for International Development
DHO	District Health Office
DMU	District Maintenance Unit
DPP	Department of Policy and Planning
EHP	Essential Health Package
EU	European Union
ESCOM	Electric Supply Corporation of Malawi Ltd.
GNI	Gross National Income
GTZ	Deutsche Gesellschaft for Technische Zusammenarbeit
HC	Health Center
HIPC	Highly Indebted Poor Country
HIV	Human Immunodeficiency Virus
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers
LG	Local Government
MASAF	Malawi Social Action Fund
MEGS	Malawi Economic Growth Strategy
MOH	Ministry of Health
MPRS	Malawi Poverty Reduction Strategy
MPRSP	Malawi Poverty Reduction Strategy Paper
NGO	Non-governmental Organization
NORD	Norwegian Development Agency
ODA	Official Development Assistance
OPD	Out-patient Department
PAM	Physical Assets Management
PHC	Primary Health Care
PRSP	Poverty Reduction Strategy Paper
RMU	Regional Maintenance Unit
SADC	Southern Africa Development Community
SWAp	Sector Wide Approach
TBA	Traditional Birth Attendant
UNAIDS	Joint United Nations Programme On HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

CHAPTER 1. BACKGROUND OF THE PROJECT

1-1 Background of the Project

In an effort to improve the public health and medical care situation in the country, the Government of Malawi in 1997 implemented a national survey of the current state of health and medical care facilities under support from the EU, and the findings of this were incorporated into a geographical information system under the JICA development study, the “Primary Health Care Strengthening Plan” in 1998. In the National Mapping Survey of Health Facilities that was carried out in 2002 as a JICA overseas fundamental survey, basic information was renewed for 617 out of 2,850 health facilities including private sector facilities in the country. The findings of this survey activity pointed to the following reasons for the poor state of public health and medical care: shortages of medical facilities and equipment, shortages of health and medical care workers, and regional disparities in the level of services, in particular, poor access to facilities and a low standard of services in rural areas.

It was under such circumstances that the Government of Malawi incorporated the improvement of health care facilities into the Fourth National Health Plan and EHP and compiled a plan to tackle the development of health and medical care facilities on the district level and below. However, due to the sheer numbers and spread of facilities that need improvement and the massive budget required, it has been unable to conduct sufficient activities. Some work was implemented in the Local Medical Care Improvement Project under the support of the African Development Bank. In this, improvements were carried out at 20 health centres in the central and southern part of the country from 2001. However, support from other donors has not been forthcoming and facilities that are capable of providing basic health and medical care services as prescribed by the EHP currently account for around only 10% of the total.

Health and medical care facilities on the level of districts and below are diverse and comprise district hospitals, health centres, dispensaries, maternal and child health units and so on. In terms of practising the EHP, the district hospitals and health centres play central roles and are heavily utilized by citizens.

District hospitals, which provide secondary health and medical care services, do not necessarily have equipment and facilities in adequate condition (some facilities are already 40 years old), nevertheless they function as general hospitals fitted with the minimum required clinical functions. In recent years, due to increases in the target population, deterioration in the health and medical care situation, and increasing referrals from lower level health centres, which are suffering from declining functions, the district hospitals now accommodate more than double their capacity and have to let many patients sleep on the floor. Thus, patients far in excess of those originally planned gather in these hospitals, leading to delays in diagnoses and treatment and declining hospital functions in general, and

there is urgent need to improve such a situation.

In particular, because district hospitals constitute the few limited facilities that are capable of providing emergency medical care for infants and performing difficult delivery procedures such as Caesarean sections, and since ailments that cause particular risk to children such as malnutrition, diarrhoea and malaria are prevalent in Malawi, it is necessary to improve and expand Maternity and paediatric wards. Moreover, in view of the high number of referrals from health centres and the high level of use of such facilities, there is an urgent need to carry out such improvements.

Health centres possess dispensaries and Maternity and provide primary health and medical care services that are immediately accessible to residents, for example, inoculations, infection countermeasures, care for pregnant and parturient women, health education and so on. Despite being used by numerous residents and indigent people in rural village areas, some of these facilities are up to 60 years old and show extreme evidence of deterioration such as rain leaks, cracking on the wall, mould and damage from bats, etc. The equipment at such facilities is also characterized by extreme deterioration and shortages, and there are numerous facilities that are unable to uphold their functions as health centres and are losing the trust of residents. Again, urgent improvement of the current situation is needed.

The original request targeted approximately 540 facilities scattered over the whole country in 28 districts. The types of facilities covered a wide range of levels from central hospitals to district hospitals, village hospitals, Health centres, clinics, maternal and child health units and facilities below the district level, and jurisdiction ranged from the public sector to the private sector. Accordingly, upon deeming it necessary to narrow down the contents, scope and scale of the assistance in order to ensure the effect of the project, the preliminary survey was implemented from October 10 to October 30, 2005.

At the stage of the preliminary survey, the need to narrow down the contents, scope and scale of the assistance in order to ensure the effect of the project was confirmed. Concerning the target facilities, it was agreed in discussions with the local side to conduct screening based on the following kinds of criteria: ① districts that contain high numbers of socially disadvantaged people that require EHP, ② districts where the health and medical care situation is relatively poor and there is urgent need to improve health and medical care facilities, ③ districts where the optimum and maximum effect of assistance can be anticipated through collaboration and synergy with technical cooperation (activities by the Japan Overseas Co-operative Volunteers in the health and medical care field), and ④ districts that have not benefited from external assistance from other donors (some parts in the centre and south of the country have received support from the African Development Bank). As a result, the Malawian side narrowed down the target areas of the request to four districts, i.e. Rumphi and Mzimba Districts in the north of the country, and Kasungu and Lilongwe Districts in the centre. As for the target facilities, since the project aims to contribute to EHP, it was agreed to narrow down to public facilities

that play a central and focal role in the practice of EHP and are heavily used by residents. In specific terms, the target facilities were narrowed down to district hospitals and health centres. Since there are numerous health centres in each area, it was necessary to further narrow the facilities down when selecting specific targets. Because it was confirmed as desirable to select facilities that currently provide health and medical care services and where the operation and maintenance of facilities is possible in order to realize the project effect, it was agreed to select existing health centres that are permanently assigned with the standard level of staffing, i.e. enrolled nurses and enrolled midwives. Regarding equipment, upon confirming that it is appropriate to procure basic and essential equipment for target facilities and that Malawi has a list of recommended EHP equipment, basic items of equipment were requested according to the said list.

In response to the request, the Government of Japan made the decision to implement the Basic Design Study and consigned JICA to dispatch the Basic Design Study Team from February 27 to March 25, 2006. Upon conducting site surveys and holding discussions with the local side, a detailed plan was examined upon taking the results of the preliminary survey into account. Eventually, the Malawian side made a request for the following contents: ① concerning district hospitals: construction of six wards in three district hospitals (construction of paediatric wards and Maternity wards at Rumphi, Mzimba and Kasungu District Hospitals) and procurement of equipment (beds and bedside tables) in line with said construction; ② concerning health centres, a) rebuilding of Dispensaries and Maternity and procurement of EHP recommended equipment at 16 health centres in four districts; and b) procurement of EHP recommended equipment at 56 health centres in four districts (including those targeted for construction of facilities).

The Study Team implemented survey of all facilities based on this request. During this work, the team held discussions with officials on the Malawian side, surveyed related facilities and collected necessary data. As a result, the following items were deleted from the contents of the request for the reasons given: ① Mzimba District Hospital Maternity ward (because it already has sufficient beds for patients), ② Kasungu District Hospital Paediatric ward (because it is already receiving assistance from Japan under a separate scheme), ③ Rumphi District Chitimba Health Centre (because it is capable of implementing roof repairs on its own resources), and ④ Mzimba District Malidade Health Centre (Because there are problems with access during the rainy season and there is a lack of permanent staff).

After the Study Team returned to Japan, it further removed the Maternity ward of Kasungu District Hospital from the request because it was deemed that it would be difficult to work with a facility that is currently receiving Japanese assistance under another scheme.

After the Study Team held explanations in Malawi on the Draft Basic Design Report from August 10 to 17, 2006, it compiled the Basic Design Study Report. The following table gives an outline of the finally requested project.

Table 1-1 Outline of the final Request

	Descriptions
Overall Target:	Improvement of Health Condition of the residents living around the targeted District Hospitals and Health Centres.
Object of the Project:	Improvement of Health and Medical Treatment Services of the targeted District Hospitals and Health Centres
Accomplishment of the Project:	Building and Medical Equipment of the targeted District Hospital and Health Centres will be accomplished.
Activities/Injection:	Building: Rumphi District Hospital (Construction of Paediatric Ward, Maternity Ward), Mzimba District Hospital (Construction of Paediatric Ward) Health Centres (Rebuilding of 7 Dispensary Buildings, 7 Maternity Buildings)
	Medical Equipment: Procurement of basic medical equipment (2 District Hospital 3 facilities and 55 Health Centres)
Injection by the Recipient Country:	1) Provide the construction sites, 2) Assignment of the staffs, 3) Budget allocation for the operation and maintenance
Target Area:	4 Districts (District of Rumphi, Mzimba, Kasungu and Lilongwe)
Beneficiary:	Direct beneficiary: Patients of the District Hospital (50,000patient per year) and Health Centres In direct beneficiary: Residents living around targeted District Hospital (about 500,000 residents) and Health Centres

CHAPTER 2 CONTENTS OF THE PROJECT

2-1 Project Outline

The Government of Malawi compiled Malawi Vision 2020 as its long-term national development plan in 1997. In this plan it aims to become a technology-oriented middle income country that is safe and ecologically balanced and where democracy has reached a mature stage, environmental sustainability is achieved, social services are provided, vital culture and religious values are preserved, autonomy is secured and all citizens have fair and active participation by 2020. Based on this basic strategy, the government compiled the Malawi Poverty Reduction Strategy Paper (MPRSP) in 2002. In this it prescribed the following as development policies, i.e. ① sustainable economic growth with consideration to people living in poverty, ② development of human resources, and ③ improvement in the quality of life of the most disadvantaged people, and it raised public health and medical care as one of the priority development sectors.

In response to the MPRSP, the Ministry of Health elected to practice development policy ③ in the field of health and medical care. With this in mind, it established the Essential Health Package (EHP) geared to making health and medical care services equally accessible to residents in rural areas and people living in poverty, and it hammered out a policy of giving priority to improving basic health and medical care services on the level of districts and below. In order to put this into practice, it compiled the Programme of Work (POW) implementation action plan. However, as was pointed out in the National Mapping Survey of Health Facilities that was carried out as a JICA overseas fundamental survey, various obstacles hinder the practice of EHP, for example, shortages and deterioration of medical facilities and equipment, shortages of health and medical care workers, lack of budgets for implementation, and regional disparities in the level of services, in particular, poor access to facilities and low standard of services in rural areas. Accordingly, this survey clarified the urgent and pressing need for improvement of health and medical care facilities in Malawi.

It was under such circumstances that the Government of Malawi incorporated the improvement of health care facilities into the Fourth National Health Plan and EHP and compiled a plan to tackle the development of health and medical care facilities on the district level and below. However, due to the sheer numbers and spread of facilities that need improvement and the massive budget required, it has been unable to conduct sufficient activities. Some work was implemented in the Local Medical Care Improvement Project under the support of the African Development Bank. In this, improvements were carried out at 20 health centres in the central and southern part of the country from 2001. However,

support from other donors has not been forthcoming and facilities that are capable of providing basic health and medical care services as prescribed by the EHP currently account for around only 10% of the total.

The Project proposes to construct medical care facilities and supply medical care equipment with a view to improving the health and medical care facilities that hinder the implementation of the EHP and realizing the qualitative improvement of health and medical care services. It is regarded as an important undertaking in implementation of the EHP in accordance with the Fourth National Health Plan that includes the diffusion of EHP.

Japan's support for the health and medical care sector in Malawi has been advanced over a wide range of activities including dispatches of individual experts and senior volunteers, and dispatches of volunteers to health centres as nurses, HIV/AIDS countermeasure officers, pharmacists and nutritionists, etc. The Project intends to link with these activities and contribute to strengthening of the local public health system in Malawi.

The Project, conducted under the Government of Japan's Grant Aid scheme, aims to construct three facilities at two district hospitals (construction of two Paediatric wards and one Maternity ward) and 14 health centres (construction of dispensaries and Maternity) and to supply medical equipment to 58 facilities including the above district hospitals and health centres in the northern part (Rumphi and Mzimba Districts) and central part (Kasungu and Lilongwe Districts) of the country, in order to realize the above goals. These facilities were selected out of the facilities contained in the original request of the Government of Malawi, which covered the whole country. Through doing this, in direct terms, it is anticipated that the Project will lead to improvement in health and medical care services in the targeted areas. In indirect terms, in the case of district hospitals that provide secondary medical care services, the target facilities benefit a total of 740,000 people living in poverty, i.e. 150,000 in Rumphi District and 590,000 living in Mzimba District. The health centres that provide primary medical services will benefit a total of 322,000 local residents. As for the 41 health centres that will only receive equipment supply, since these have been constructed with a service population of 20,000, approximately 820,000 people will be beneficiaries.

Table 2-1 Outline of the Project

	Descriptions
Overall Target:	Improvement of Health Condition of the residents living around the targeted District Hospitals and Health Centres.
Object of the Project:	Improvement of Health and Medical Treatment Services of the targeted District Hospitals and Health Centres
Accomplishment of the Project:	Building and Medical Equipment of the targeted District Hospital and Health Centres will be accomplished.
Activities/Injection:	<p>Building: Rumphi District Hospital (Construction of Paediatric Ward, Maternity Ward), Mzimba District Hospital (Construction of Paediatric Ward) 14 Health Centres (Rebuilding of 7 Dispensary Building, 7 Maternity Building Total Floor Area: 3,891.4 square meters</p> <p>Medical Equipment: Procurement of basic medical equipment (2 District Hospital 3 facilities and 55 Health Centres)</p>
Injection by the Recipient Country:	1) Provide the construction sites, 2) Assignment of the staffs, 3) Budget allocation for the operation and maintenance
Target Area:	4 Districts (District of Rumphi, Mzimba, Kasungu and Lilongwe)
Beneficiary:	Direct beneficiary: Patients of the District Hospital (50,000patient per year) and Health Centres In direct beneficiary: Residents living around targeted District Hospital (about 500,000 residents) and Health Centres

2-2 Basic Design of the Project

2-2-1 Design Policy

- Progress of the Project -

<Components of original request>

The original request targeted approximately 540 facilities scattered over the whole country in 28 districts. The types of facilities included covered a wide range of levels from central hospitals to district hospitals, rural hospitals, health centres, clinics, maternal and child health units and facilities below the district level, and jurisdiction ranged from the public sector to the private sector.

<Preliminary study>

In the preliminary survey, as a result of conducting site surveys and holding discussions with the local side, it was agreed to target four districts, i.e. Rumphi and Mzimba Districts in the north of the country, and Kasungu and Lilongwe Districts, based on the following criteria:

- ① Districts that contain high numbers of socially disadvantaged people that require EHP,
- ② Districts where the health and medical care situation is relatively poor and there is urgent need to improve health and medical care facilities,
- ③ Districts where the optimum and maximum effect of assistance can be anticipated through collaboration and synergy with technical cooperation (activities by the Japan Overseas Co-operative Volunteers in the health and medical care field), and
- ④ Districts that have not benefited from external assistance from donors (some parts in the centre and south of the country have received support from the African Development Bank).

As for the target facilities, since the project aims to contribute to the EHP, it was agreed to narrow down to facilities that ① play a central and focal role in the practice of the EHP, ② are heavily used by residents, and ③ are public facilities, and district hospitals and health centres that satisfy these criteria were requested.

Concerning health centres, in order to ensure realization of the project effect, it was agreed to select health centres that currently provide health and medical care services and are permanently assigned with enrolled nurses and enrolled midwives.

Regarding equipment, upon confirming that it is appropriate to procure basic and essential equipment for target facilities and that Malawi has a list of recommended EHP equipment, basic items of equipment were requested according to the said list.

The contents of the request that were arrived at as a result of the preliminary survey were as follows.

District hospitals in the three districts of Rumphi, Mzimba and Kasungu, and health centres in four districts, i.e. these three districts plus Lilongwe.

① District hospitals in three districts

- Facilities construction (extension): Paediatric ward (around 300 m², one story), Maternity ward (300 m², one story)
- Equipment supply: ward equipment (patient beds, bedside cabinets, screens, etc.)

② Health Centres

Facilities construction was requested at 16 health centres (three in Rumphi District, five in Mzimba District, five in Kasungu District and three in Lilongwe District), however, these were narrowed down to a maximum of 15 before the Basic Design Study.

- Facilities construction (rebuilding): Maternity, dispensaries (around 200 m² each, one story)
- Equipment supply: Maternity equipment (delivery tables, suction units, resuscitators, etc) and outpatient equipment (sphygmomanometers, sterilizers, etc.)

<Basic Design Study>

In the Basic Design Study, upon holding discussions with the local side, a detailed plan was discussed and examined upon taking the results of the preliminary survey into account. As a result, the Malawian side made a request for the following contents: ① concerning district hospitals: construction of six paediatric wards and Maternity wards and procurement of equipment (beds and bedside tables) in line with said construction in three district hospitals; ② concerning health centres, a) rebuilding of outpatient departments and Maternitys and procurement of EHP recommended equipment at 16 health centres in four districts; and b) Procurement of EHP recommended equipment at 56 health centres in four districts (including those targeted for construction of facilities).

In the site surveys that were conducted in the four target districts, the Study Team surveyed three district hospitals and 16 health Centres targeted for facilities construction, and three district hospitals and 56 health centres targeted for equipment supply.

RHC-3 Katowo Heath Centre and MHC-9 Euthini Health Centre, which were surveyed as health centres, were found to be ranked as rural hospitals providing secondary medical care services. Since secondary medical care services are similar to the services provided by district hospitals, they are far removed from the scope of the Project. However, apart from health posts, no other health facilities provide primary medical care services in the areas around these facilities. Accordingly, it was decided to adopt a plan to specialize the medical service level of these rural hospitals into secondary medical care services through constructing health centre Maternity with ordinary delivery capability and enabling ordinary deliveries as conducted by existing rural hospitals to be implemented.

KHC-11 Chamwabvi Dispensary is a Dispensary possessing only a Dispensary, however, registered nurses provide medical care services and can assist deliveries, moreover, the nearby area has no health centre or Maternity facilities. Accordingly, it was decided to construct a Maternity and raise the facility in status to a health centre, while the Ministry of Heath has agreed to appoint medical assistant staff by

the time the works are completed.

Concerning land ownership, all the target district hospitals and health centres are constructed not on land owned by the community (customary land) but on public land, and jurisdiction by the Ministry of Health was one of the confirmation items for selecting candidate sites. Since landownership can be confirmed by looking at the title and deeds, the Study Team requested submission of these during the survey, and they were forthcoming from all the candidate sites and confirmed there to be no problem.

At the three district hospitals, the Study Team surveyed treatment records (number of inpatients, number of deliveries, etc.) at the paediatric and Maternity wards, numbers of medical personnel and the state of infrastructure, etc., and the results they found are as indicated in the following table. (See the appendices for the survey summary sheet).

Table 2-2 Outline of survey result of District Hospital (Paediatric ward and Maternity ward)

ID No.	Name of Facility	Ward (Existing No. of Beds:)	Priority	Outline of survey result
Rumphi district				
RDH	Rumohi District Hospital	Paediatric Ward (24 beds)	A	Shortage of beds because of many admitted patients.
		Maternity Ward (36 beds)	A	Shortage of beds because of many admitted patients.
Msimba district				
MDH	Mzimba District Hospital	Paediatric Ward (48 beds)	A	Shortage of beds because of many admitted patients.
		Maternity Ward (48 beds)	C	Existing No. of beds is good enough for the admitted patients.
Kasungu district				
KDH	Kasungu District Hospital	Paediatric Ward (12 beds)	C	Paediatric ward is under construction by the grass root grant aid from Government of Japan.
		Maternity Ward (24 beds)	A→C	Shortage of beds because of many admitted patients. However, other scheme of assistance is under execution, it was judged difficult to provide grant aid in the same compound.

A: Essential B: Necessary C:Least feasible

In order to objectively judge the contents of the facilities reviewed in the survey of health centres, points under each survey item were collated in order to rank the priority of facilities construction (A: 6 points or more, B: 5 points, C: less than 5 points – omission from the scope of assistance). The following table shows the items that were marked in this way. Since some health centres entailed special circumstances in spite of the priority ranking, the following facilities were ranked as C and omitted from the request even though they were initially ranked as A or B: facilities that were deemed could be repaired under the efforts of the Ministry of Health, and facilities that were deemed to be inaccessible during the rainy season.

Table 2-3 Bases of allotment of marks for rank the priority of facilities construction

Items	Bases of allotment of marks (Points)
(1)Building age (years)	More than 40 :5, More than 30 :3, More than 20 : 1
(2)Number of staffs (permanent)	Medical assistant, (Enrolled) Nurse, Midwives 3 persons : 3, 2persons :2, 1Person:1
(3)Diagnostic activity	Done:1, None:0
(4)Ownership of well	MOH:2, Community:1
Special Condition	
(1)Building Condition	Omit if facilities that were deemed repaired under the efforts of the Ministry of Health
(2)Accessibility in rainy season	Omit if the accessibility in rainy season become difficult by the sites survey result.

The following table shows the results of the survey of the target facilities for construction.

Table 2-4 Result of the Health Centre Survey and its priority

No.	ID No.	Name of Rural Health Center	Type of construction building	Requested Facilities	Priority	Total Points	Age of Building (year)	(1)Points: More than 40 years : 5, 30 years : 3, 20 years: 1	Population of Catchment Area (Unit: 000)	Medical Assistant	Enrolled Nurse /Midwife	Perm or temp.	No. of Perm. Nurse	(2)Point: 3 staffs: 3, 2 staffs: 2, 1staffs: 1	Number of delivery (average: No.)	No. of Ant Natal Care (average:No.)	No. of Patients in Dispensary (Average: No.)	Static Immunization inc. out reach activities	(3)Diagnostic Activity Yes:1, No:0	Water Source	Ownership of Water Source	(4)Points: MOH's Well : 2, Community's well : 1
Rumphi District																						
1	RHC-1	Chitimba Health Center	Dis	Dis	C	6	18	1	5	1	1	Perm.	2	2	0.5/day	157/Mon	30/Day	Y	1	Well	MOH	2
2	RHC-3	Katowo Rural Hospital	Mat	Mat	A	10	49	5	15	1	1	Perm.	2	2	1.5/day	244/Mon	10/Mon	Y	1	Well	MOH	2
3	RHC-6	Mwazisi Health Center	Mat	Mat	A	6	28	1	14	Tem	1	Perm.	2	2	0.9/day	722/Mon	24/Day	Y	1	Well	Com./Co nstructi	2
Mzimba District																						
4	MHC-4	Emfeni Health Center	Mat	Mat	A	7	23	1	20	1	2	Perm.	3	3	1.0/day	6/Day	103/Day	Y	1	Well	MOH	2
5	MHC-6	Endindeni Health Center	Dis	Dis	B	5	25	1	16	0	1	Perm.	1	1	0.6/day	24/Day	51/Day	Y	1	Well	MOH	2
6	MHC-9	Euthini Health Centre	Mat	Mat/Dis	A	6	19	1	16	1	1	Perm.	2	2	1.7/day	?	350/Day	Y	1	Well	MOH	2
7	MHC-12	Kafukule Health Center	Dis	Dis	D:A	D: 9 M: 3	D:42/ M:9	D:5 M:0	10	0	1	Perm.	1	1	0.5/day	258/Mon	57/Day	Y	1	Well	MOH	2
8	MHC-21	Malidade Health Center	Dis	Dis	C	8	50	5	25	1	0	Temp.	1	1	-	-	625/Mon	Y	1	Well	Com	1
Kasungu District																						
9	KHC-1	Chulu Health Center	Dis	Dis	A	11	49	5	32	1	2	Perm	3	3	0.8/day	230/Mon	100/Day	Y	1	Well	MOH	2
10	KHC-3	Kapelula Health Center	Mat	Mat	B	5	28	1	35	1	0	Perm	1	1	0.5/day	?	885/Mon	Y	1	Well	MOH	2
11	KHC-8	Simulemba Health Center	Dis	Dis	B	5	28	1	51	1	0	Perm	1	1	0.9/day	100/Mon	929/Mon	Y	1	Well	MOH	2
12	KHC-10	Khola Health Center	Dis	Mat/Dis	A	6	30	1	30	1	0	Perm	1	1	0.5/day	127/Mon	1400/Mon	Y	1	Well	MOH	2
13	KHC-11	Chamwabvi Health Center	Mat	Mat	B	5	26	1	27	0	1	Perm	1	1	-	-	900/Mo	Y	1	Well	MOH	2
Lilongwe District																						
14	LHC-1	Chiwamba Health Center	Dis	Dis	D:A	D: 10 M: 5	M:35 D:19	M:5 D:0	56	1	2	Perm	3	3	1.2/day	104/Mon	1367/Mon	Y	1	Well	MOH	2
15	LHC-2	Mtenthera Health Center	Mat	Mat	A	6	20	1	45	1	1	Perm	2	2	-	36/Mon	1820/Mon	Y	1	Well	MOH	2
16	LHC-3	Mbangombe 1 Health Center	Dis	Mat/Dis	B	5	20	1	12	1	1	Perm	2	2	7-0.8/d	150/Mon	1300/Mon	Y	1	Well	Com.	1

Priority : A: Essential, B: Necessary, C: Least Feasible

Following further analysis after the Study Team returned to Japan, the Project targets were refined into a total of 58 facilities, i.e. construction at two district hospitals (three wards) and 14 health centres,

and equipment supply at two district hospitals (three wards) and 55 health centres.

Table2-5 Name of District and Number of Sites for Assistance

Facilities	District Name and Type of Facilities	Construction of Facilities			Medical Equipment	
		A	B	C	A	C
<District Hospital>	Rumphi District Paediatric Ward	1	—	—	1	—
	Maternity ward,	1	—	—	1	—
	Mzimba District Paediatric Ward	1	—	—	1	—
	Maternity Ward		—	1		—
	Kasungu District Paediatric ward	—	—	1	—	—
	Maternity Ward	—	—	1	—	—
	District Hospital Total	3	—	3	3	—
<Health Centres>	Rumphi District	2	0	1	6	1
	Mzimba District	3	1	1	35	—
	Kasungu District	2	3	—	11	—
	Lilongwe District	2	1	—	3	—
	Health Centres Total	9	5	2	55	1
Construction of Facilities and Medical Equipment Total		14		—	55	—
Construction of Facilities and Medical Equipment Grand Total		17		—	58	—

Priority A : Essential, B : Necessary, C : Least feasible

The following table gives a comparison of the assessment findings of the surveyed facilities at the time of the Basic Design Study and following the analysis in Japan. Facilities that were ranked as C for construction and X for equipment supply following the analysis in Japan were omitted from the scope of the Project.

Table 2-6 Comparison of Evaluated Component of Requested Contents

No.	ID No.	Name	Evaluation at the B/D				Evaluation after Analisation			
			Medical Equipment	type of Building	Priority	Remarks	Medical Equipment	type of Building	Priority	Remarks
Rumphi District										
	RDH	Rumphi District Hospital	○	Pediatric	A		○	Pediatric	A	
			○	Maternity	A		○	Maternity	A	
1	RHC-1	Chitimba HC	○	Dispensary	C	Renovation by Malawian side	○	Dispensary	C	
2	RHC-2	Jalawe HC	x			No diagnostic activity	x			
3	RHC-3	Katowo RH	○	Maternity	A		○	Maternity	A	
4	RHC-4	Mhjuu HC	○				○			
5	RHC-5	Mpompha HC	○				○			
6	RHC-6	Mwazisi HC	○	Maternity	A		○	Maternity	A	
7	RHC-7	Mzokoto HC	○				○			
Mzimba District										
	MDH	Mzimba District Hospital	○	Pediatric	A		○	Pediatric	A	
			○	Maternity	C	Existing number of beds is enough.	○	Maternity	C	
8	MHC-1	Bulala HC	○				○			
9	MHC-2	Bwengu HC	○				○			
10	MHC-3	Choma HC	○				○			
11	MHC-4	Emfeni HC	○	Maternity	A		○	Maternity	A	
12	MHC-5	Emsizini HC	○				○			
13	MHC-6	Endindeni HC	○	Dispensary	B		○	Dispensary	B	
14	MHC-7	Enukweni HC	○			Only medical equipment for Dispensary.	○			
15	MHC-8	Engucwini HC	○				○			
16	MHC-9	Euthini RH	○	Maternity	A		○	Maternity	A	
17	MHC-10	Hoho HC	○				○			
18	MHC-11	Jenda HC	○				○			
19	MHC-12	Kafukule HC	○	Dispensary	A		○	Dispensary	A	
20	MHC-13	Kamteteka HC	○				○			
21	MHC-14	Khosolo HC	○				○			
22	MHC-15	Kabuwa HC	○				○			
23	MHC-16	Kamwe HC	○				○			
24	MHC-17	Luwere HC	○			Only medical equipment for Dispensary.	○			
25	MHC-18	Luwerezi HC	○				○			
26	MHC-19	Luzi HC	○				○			
27	MHC-20	Madede HC	○				○			
28	MHC-21	Malidade HC	○	Dispensary	C	No permanent medical assistant. Construction difficulty in rainy season.	○	Dispensary	C	
29	MHC-22	Manyamula HC	○				○			
30	MHC-23	Mbalachanda HC	○				○			
31	MHC-24	Mpherembe HC	○				○			
32	MHC-25	Msese HC	○				○			
33	MHC-26	Mtende HC	○				○			
34	MHC-27	Mtwalo HC	○				○			
35	MHC-28	Mzalongwe HC	○				○			
36	MHC-29	Mzuzu Urban HC	○				○			
37	MHC-30	Njuyu HC	○				○			
38	MHC-31	Kabwafu HC	○				○			
39	MHC-32	Thunduwike HC	○				○			
40	MHC-33	Mkoma HC	○				○			
41	MHC-34	Luwawa HC	○				○			
42	MHC-35	Nkhukuyu HC	○				○			
Kasungu District										
	KDH	Kasungu District Hospital	○	Pediatric	C	Pediatric Ward is under construction by Japanese Grass Roots assistance.		Pediatric	C	
			○	Maternity	A			Maternity	C	Other scheme of assistance is on going, and difficult to provide another assistance to the same.
43	KHC-1	Chulu HC	○	Dispensary	A		○	Dispensary	A	
44	KHC-2	Kamboni HC	○				○			
45	KHC-3	Kapelula HC	○	Maternity	B		○	Maternity	B	
46	KHC-4	Kawamba HC	○				○			
47	KHC-5	Mkhota HC	○				○			
48	KHC-6	Mtunthama HC	○				○			
49	KHC-7	Santhe HC	○				○			
50	KHC-8	Simulemba HC	○	Dispensary	B		○	Dispensary	B	
51	KHC-9	Wimbe HC	○				○			
52	KHC-10	Khola HC	○	Dispensary	A		○	Dispensary	A	
53	KHC-11	Chamwabvi Dis.	○	Maternity	B		○	Maternity	B	
Lilongwe District										
54	LHC-1	Chiwamba HC	○	Dispensary	A		○	Dispensary	A	
55	LHC-2	Mtentera HC	○	Maternity	A		○	Maternity	A	
56	LHC-3	Mbangombe 1 HC		Dispensary	B	Land ownership need to be changed to HOH. Med. Equipment was not listed in M/M.	○	Dispensary	B	After confirmation of land ownership to MOH, building construction and med. Equipment was decided.

Priority A: Essential, B: necessary, C: Least Feasible

(1) Concept regarding the Facilities Plan and Equipment plan

- Even though additional Paediatric wards and Maternity wards will be constructed at district hospitals, since there will not be commensurate increases in staff numbers and it will be necessary to consider operation using present staff levels, it is necessary to plan only for patient beds that are currently in short supply and facilities related to these. Accordingly, the required number of rooms shall be determined upon considering current medical care conditions, patient accommodation capacity and maintenance conditions and taking the urgency and priority of development into account. Moreover, plans shall be based on the current number of medical staff and implementation setup, and care shall be taken not to place too much of a burden on the staff.
- The Ministry of Health consigns building design and supervision work (outside its realm of speciality) to the Ministry of Transport and Public Works. The said ministry confirms standard design drawings for health centres that were prepared by other donors, and it has a long history of such work. Since standard design drawings are subject to revisions over time, it is possible to understand recent trends in standard floor plans by looking at these changes, and these plans can provide reference for floor planning. Accordingly, concerning the necessary number of rooms in Health centres, appropriate space shall be adopted upon referring to the standard design drawings prepared by the Ministry of Health and other donors of other countries.
- In the site surveys, numerous facilities were found to suffer from common problems such as termite damage in timber, odour and defiling caused by bat urine and droppings in lofts, rusty roofs and so on. Selecting the appropriate materials and making design modifications can overcome such problems. Accordingly, durable and weather-resistant finishing materials shall be used in consideration of construction conditions in Malawi, while measures to prevent damage by bats shall be incorporated from the design stage.

<District hospitals (Maternity wards, Paediatric wards)>

- Even though numbers of patients are in excess of capacity and additional Paediatric wards and Maternity wards will be constructed, since there will not be commensurate increases in staff numbers and it will be necessary to consider operation using present staff levels, the following policy shall be adopted:
- In order to reinforce accommodation capacity, the minimum required scale of facilities shall be planned in reference to past inpatient numbers and hospitalisation days.
- Concerning Maternitys, existing wards shall be used for antenatal functions while newly constructed wards shall be used for post-natal functions in consideration of work efficiency.
- Concerning Paediatric wards, the newly constructed wards shall be exclusively used for non-infectious patients (children suffering from malnutrition and surgical patients) in consideration of work efficiency and in order to reduce the risk of in-hospital infections.
- Existing Maternity do not have enough labour beds and delivery tables to deal with the required number of deliveries. In order to support care for pregnant and parturient women in the EHP

field of mother and child health care, enough delivery rooms and labour rooms to satisfy the number of deliveries shall be incorporated into the plan.

- One of the reasons for the high mortality rate among newborn infants and children less than five years old are complications of infections and nutritional disorders. Measures to deal with nutritional disorders are also a priority item in the EHP. Accordingly, kitchens shall be included in the Paediatric ward plans in order to support malnutrition countermeasures and conduct nutritional guidance.
- Infections are the most prevalent problem among outpatients and they are also the primary cause of fatality among inpatients. Accordingly, in order to support infection countermeasures, which are an important item in the EHP, washbasins shall be installed at the entrance to each ward and people entering wards shall be encouraged to wash their hands in sanitary training.

<Health Centres (dispensaries, Maternity)>

- Health centres are established according to the basic criteria of one per 20,000 people in urban areas and one per 10,000 people in rural areas, and the numbers of medical care staff are also prescribed. Accordingly, if the scale of facilities is expanded, there is a strong possibility this will lead to reduce medical care services unless staff numbers are also increased. Accordingly, the scale of facilities shall be planned according to the criteria of establishment and numbers of medical staff.
- Concerning the decision on whether to rebuild dispensaries and Maternity, wards that are smaller than the said criteria and wards that cannot provide basic medical services due to deterioration shall be targeted.
- Health centres are the most important health and medical care facilities (infrastructure) for implementing the EHP. Accordingly, floor plans that enable EHP support functions to be added to the medical treatment and delivery functions of Dispensary and Maternity shall be adopted so that it is possible for medical staff dispatched from district hospitals to conduct travelling clinics.
- Health centre Dispensary does not possess inpatient facilities in terms of both the medical care setup and facilities planning. Since patients who require hospitalisations are referred to district hospitals under the current setup, inpatient wards shall not be included in the plans, however, referral waiting rooms shall be planned.
- Maternitys are the only places in rural areas where assistance by trained midwives can be received in child delivery. Through providing referrals to district hospitals based on diagnosis of abnormal delivery or complications in antenatal examinations, these facilities are essential for ensuring safe delivery for pregnant women. Examination rooms, in which it is possible to conduct antenatal examinations, shall be planned in order to support the care of pregnant and parturient women according to EHP mother and child care and enable safe deliveries.
- In regional areas, Maternity and homes of pregnant women are often fairly separated and the only means of transport are ox wagon, walking or bicycle. Accordingly, in cases where

pregnant women go into labour at home, since it is difficult for them to get to health centres, home deliveries with the help of TBA are common. In order to support the care of pregnant and parturient women according to EHP mother and child care and enable deliveries to be made with the assistance of qualified enrolled nurses or midwives, antenatal wards that allow pregnant women to come to hospital close to the expected date and give birth there, and post-natal wards that allow staff to observe progress following delivery shall be planned.

- Among the facilities that were surveyed as health centres, two rural hospitals were included. Rural hospitals provide secondary medical services and therefore differ from health centres in the contents of their work. However, both these rural hospitals have been elevated to the status of health centres following construction of inpatient wards; moreover, no other health centres exist in the areas concerned. Moreover, the Maternity to be constructed shall be designed with the same functions and scale as health centres intended for ordinary deliveries.
- One Dispensary was included in the facilities that were surveyed as health centres. This comprises a single building of approximately 180 m². It mainly conducts examinations and care for outpatients, but it also implements assistance for ordinary deliveries where required. In order to support the care of pregnant and parturient women according to EHP mother and child care and enable deliveries to be conducted in safety, a Maternity ward shall be constructed and functions shall be enhanced to the level of a health centre.
- Flush toilets cannot be connected to water sources. Accordingly, the existing outdoor toilets shall be used in the Project, and no indoor toilets shall be installed in the health centres.

<Policy regarding the equipment plan>

< Health centres (Dispensary and Maternity) >

- ① The EHP standard equipment list, which MOH of Malawi conceived, covers the equipment that medical facilities of the MOH jurisdiction should possess and the equipment specifications are set to the level that the existing medical personnel can use efficiently. Therefore, it is assumed that equipment should be selected and the specifications should be determined referring to the said standard equipment list.
- ② In the preliminary study, because the equipment plan of MOH was under progress for the district hospitals of the whole country with the delivery scheduled in the latter half of 2006, it was judged that planned be to procure such ward equipment as beds, bedside cabinets, and screens, etc., which the said plan of MOH would not cover and the medical equipment of the targeting district hospitals not be included in this project. However, because it had turned out that the nationwide district hospital equipment plan of MOH did not cover the targeting facilities to be newly constructed in the basic design study, and therefore the equipment plan was needed to review.

The study team examined the priority of the project components to improve since it is difficult to include all the necessary equipment due to budget restriction of the Japan side though MOH desired to procure in this project equipment related to delivery and neonatal care for the

new wards of district hospitals. As a result of the examination, excluded are from the project such items of equipment related to delivery and neonatal care etc. though the necessity was admitted because it had been judged that the implementation effect become more enhanced by improving the primary health care immediately for the local residents who spread out to the remote villages.

As a result of the meeting, the study team requested Malawi side to understand that the Malawi side procure the said equipment for the new wards of the district hospitals by itself and both sides reached to the mutual consensus. During the draft basic design, the study team proposed the equipment list which was selected from among the EHP standard equipment list in the light of validity and urgent necessity, and the rough estimate of the procurement cost so that MOH can secure the budget measures and send the order concerning procurement of other necessary equipment than the ward equipment.

MOH explained to the study team that the rough estimate of cost, which the study team showed, was in a possible range for MOH to procure the equipment that the study team had proposed to the district hospital equipment plan in the next fiscal year by the assistance of SWAPs and the procurement was agreed positively. Moreover, the consultant assumed that it would properly advise MOH for equipment to be delivered according to completion of facilities construction. It is assumed to be a policy to examine the ward equipment in the maternity ward and the paediatrics ward, and to plan a necessary amount and the specifications according to a building plan from the above-mentioned details about the district hospitals.

<District hospitals (Maternity ward and Paediatrics ward)>

- ① It is assumed that equipment be selected from the EHP standard equipment list for the reasons similar to district hospital.
- ② Standard medical personnel of health centres consist of one medical technician, one enrolled nurse/mid-wife and a few health workers. Such medical personnel can provide with local residents such diagnostic services as height measurement and diagnosis by stethoscope, drugs administration, and simple treatment as suturing, and normal delivery for maternity services. Therefore, it is assumed to be a policy to plan procurement and the replenishment of equipment necessary for improving the first primary health care service.

(2) Policy regarding Natural and Environmental Conditions

① Temperature

Weather conditions differ according to latitude and altitude, however, in the target area, annual mean temperatures range between 8°C (June-July) and 30°C (October-December). Mean humidity is between 60~90%. Such conditions would make it essential to install electric air conditioning equipment in advanced countries. However, in the case of Malawi, only one of the health centres targeted for new construction that were covered in the survey was found to be accessible to the public electricity network. Moreover, due to the high level of tariffs, installing

electric equipment would only lead to additional burden due to the cost of electricity. Accordingly, design shall be modified so that facilities are based on natural ventilation and natural lighting.

② Rainfall

Annual mean rainfall over the past six years has been 635 mm in Rumphu, 902 mm in Mzimba, 800 mm in Kasungu and 842 mm in Lilongwe, and rainfall is concentrated into the rainy season that lasts for six months from October to April. Accordingly, sloped gable roofs, which are the common roof type in the local area, shall be adopted in order to prevent rain leaks. At health centres, since light will be incorporated from skylight windows on the corridor in the centre of the building, roofs shall be staggered and designed as shed roofs. Moreover, rainwater utilization shall be incorporated into the plans.

③ Earthquake

Since Malawi has no past record of earthquakes or earthquake damage, seismic force shall not be taken into account in the structural calculations.

④ Measures against termites and bats

Since soil in the local area is laterite and contains a lot of termites, measures to counter ants, bats and rodents shall be incorporated into the plans.

(3) Policy regarding Socio-economic Conditions

① Consideration for HIV/AIDS inspections

Prejudice against HIV/AIDS is slowly being removed, however, due to a lack of information, people still mistakenly believe that HIV/AIDS is spread through contact or airborne infection and social discrimination against patients remains deep-rooted. Accordingly, at the VCT (Voluntary Counselling and Testing) to be installed in the health centres, a separate entrance shall be provided for HIV/AIDS patients in order to ensure their privacy.

(4) Policy regarding the Construction Situation / Procurement Situation and Special Conditions / Trade Practices in the Industry

① Building regulations and related legislation

- Since Malawi doesn't have its own design standard, the Ministry of Transport and Public Works recognizes the British Standard (BS) or equivalent standards. Since the consultant has used the BS in the past in the design of concrete and wind loads and is able to handle it, the BS shall be applied in the Project. However, because it has no experience of applying the BS to the design of ground bearing force, concrete blocks and timber, Japanese standards shall be applied in these areas.
- When implementing construction on the level of municipalities in urban areas, since it is necessary to apply for building permission, work drawings must be submitted to the City Assembly construction section upon completion. However, since the health centres to be constructed in the Project are all located in rural villages, it was confirmed that it is not necessary to apply for building to the Building Department of the Ministry of Transport and

Public Works. As for the district hospitals, since the Project works are for extension only, it was confirmed with the Building Department of the Ministry of Transport and Public Works that there is no need to apply for confirmation with local construction sections. Accordingly, no confirmation applications shall be made in the Project.

- Concerning fire service law, the fire department that belongs to each district assembly determines the location of indoor hydrants (hose reel: 30 m intervals), fire extinguishers (powder/liquid) and alarm bells, etc. inside buildings need in drawing reviews. Therefore, the draft plans of facilities shall be submitted to each responsible fire department in advance.
- Concerning environmental impact assessment, although this is required when building new buildings in urban areas, it was confirmed with the Building Department of the Ministry of Transport and Public Works that this is exempted when facilities already exist on building sites. In the Project, since all the target district hospitals and health centres are existing facilities, there are no sites that require environmental impact assessment. Accordingly, no environmental impact assessment documentation will be prepared in the Project.

② Use of locally procured equipment and materials

- Both locally made cement and cement from South Africa can be purchased in Malawi. However, it was found in past grant aid projects (Domasi Teachers College) that Malawian cement does not provide sufficient strength and has other quality problems. Accordingly, South African cement shall be procured on the local market in the Project.
- In terms of structural materials, concrete blocks, concrete, and stabilized soil blocks (SSB), etc. are used in Malawi. As a result of comparing these materials in terms of cost, environmental measures, ease of works and maintenance cost, etc., it was found that concrete blocks of uniform quality can be manufactured close to building sites by mixing cement, sand and water in a mixer. Moreover, in the case of concrete blocks, yield can be increased simply through employing more operators. Reinforced concrete block structures shall be adopted from the viewpoints of improving the ease of execution and shortening the works period.

③ Utilization of local works methods and labourers

- When health centres are constructed in Malawi, irrespective of where construction takes place, common foundations as specified on standard design drawings are constructed without conducting ground surveys. For this reason, wall cracks caused by uneven subsidence are frequently seen in health centres constructed on sites of weak ground. In the Project, since ground surveys implemented during the basic design study showed that the bearing capacity of soil differs according to site, the form of foundations shall be determined by structural calculation according to the bearing capacity of soil.
- In the detailed views given on standard design drawings, open-burned brick structure with mortar and paint finishing is the most common mode of construction. Because open-burned bricks are mainly derived from cottage industries, a lot of firewood is used for burning, and environmental destruction caused by tree felling for this purpose has become a social

problem. Furthermore, because bricks are piled up before burning and firewood is inserted into holes, an even flame doesn't reach all the bricks, thereby leading to uneven strength and poor yield. In cases of brick masonry structures, because the strength of bricks becomes the building strength, it is essential to secure the designated strength of bricks, however, this is difficult. However, concrete blocks of uniform quality can be manufactured close to building sites by mixing set ratios of cement, sand and water in a mixer, and they can be carried onto site after conducting strength testing. Moreover, because firewood is not used and there are no environmental problems caused by tree felling, concrete block structures shall be adopted as structural materials and finished with mortar coating and paint.

- Reinforced concrete block construction is still not common in Malawi, however, it is forecast this will become the mainstream method in the future. Accordingly, technology shall be transferred to the local brick makers as far as possible in order to promote employment.

(5) Policy regarding Utilization of Local Sub-Contractor

- A Japanese building construction company will be the construction works contractor for the Project, however, if the usual pattern is followed, a Malawian construction company will be employed as a subcontractor for implementing the works. The project proposes to construct reinforced concrete block facilities of between 200~400 m² and since there are 17 target work sites throughout central and northern areas of Malawi, the subcontractor does not have to be an especially large company in terms of capital and number of employees. Small and medium-size operators that have executed school construction projects under assistance from DFID and so on can be utilized because they are somewhat accustomed to the quality control and schedule management methods of overseas consultants. Accordingly, when it comes to approving the local subcontractor for the works period, in addition to the operating size of the company, consideration shall be given to experience with aid projects.

(6) Policy regarding Operation and Maintenance Capacity

- Maintenance staff that specializes in plumbing and drainage equipment, electrical equipment, carpentry and medical equipment is assigned to each district hospital and are responsible for implementing maintenance at the district hospitals and health centres. However, in reality, the current maintenance budget and setup do not stretch to cover all medical facilities in the districts.

<District hospitals>

- Only beds and bedside lockers will be supplied to district hospitals in the Project. The medical staff will be able to conduct daily inspections on these items, and there will be no need for specialized maintenance staff. Accordingly, there will be no problems with the existing maintenance setup and budget.

<Health Centres>

- In the plumbing plan for health centres, wells are the water sources, however, pumps for supplying well water to buildings cannot be installed because the health centres are not connected to the power network and budgets for installation and maintenance costs cannot be secured. Therefore, pipe-based water supply systems shall not be planned in the Project. The current approach of placing plastic containers with faucets next to sinks and conducting washing there shall be adopted in the Project. As for drainage from sinks, pipes shall be connected to outdoor drainage ditches. Accordingly, in the plumbing plan, it will be necessary for medical staff to clean sinks and shower booths, however, since no other maintenance of plumbing equipment will be required, there will be no need for specialized maintenance staff or maintenance budget.
- Concerning electrical equipment in the health centres, in order to support EHP mother and child health care and care for pregnant and parturient women and enable Maternity to conduct night-time deliveries, solar power generating equipment shall be procured in the equipment works, while light bulbs and batteries shall be installed in delivery rooms. Before handing over these solar power generating systems, maker engineers shall explain initial operation and handling methods on installation. Since the solar power generating systems do not require any routine maintenance apart from the replacement of dead bulbs and batteries, there will be no need for maintenance staff. The only other equipment that requires spare parts are the light bulbs and dry cell batteries of diagnostic equipment sets, however, all such parts can be procured in Malawi without any problems and medical staff can do the necessary replacements. Therefore, there will be no need to employ specialized maintenance staff.

Summing up, the district hospitals and health centres targeted in the Project will have no equipment that requires specialized know-how for maintenance. Accordingly, because daily cleaning and maintenance by medical staff will be the main activity of building maintenance, wall and floor materials that allow easy cleaning and maintenance shall be adopted in the Project.

<Policy regarding reduction of operation and maintenance costs, resource saving and energy saving>

- Since the operation and maintenance budget for district hospitals is limited due to financial reasons within the Malawi government, it is necessary to control financial expenditure based on the policies of reducing operation and maintenance costs, resource saving and energy saving. Concerning lighting equipment at district hospitals, lighting switches shall be divided so that lights can be economically, efficiently and effectively extinguished by area in order to reduce electricity charges.
- Since existing maintenance staff at the district hospitals will conduct maintenance and inspections of the Project facilities, priority shall be given to adopting equipment and systems that correspond to those in existing facilities to ensure the ease of maintenance.

(7) Policy regarding the Grade of Facilities and Equipment

<Facilities>

- In the facilities plan for district hospitals, since there are no plans to increase the number of maintenance staff, it is necessary to adopt a plan that allows present staff to conduct maintenance without acquiring any new technology. Accordingly, priority shall be given to selecting locally available materials in accordance with the existing facilities, and grades on roughly the same level as the existing district hospitals shall be aimed for.

In the construction materials plan for district hospitals and health centres, it is necessary to select materials that require little or no maintenance in order to keep operation and maintenance costs down. Roof materials will differ from specifications given in the standard design, however, materials that require no re-painting shall be adopted. Concerning finishing of interior and exterior walls, mortar coating by trowel and paint finish shall be adopted since this corresponds to the method given in the standard design prepared by the Ministry of Transport and Construction and overseas donor agencies and it enables easy recoating if it becomes dirty. Grades that correspond to standard design facilities shall be aimed for.

<Equipment plan>

<Correspondence of validity and MOH policy>

- MOH adopts the policy of attempting the improvement of the medical service by the EHP practice. Physical Asset Management Division (PAM) of MOH is taking charge of the medical equipment procurement for medical facilities over which this ministry has jurisdiction. Following the EHP standard equipment list, PAM prepares equipment list and tender documents, execute tendering, evaluation of proposed tender documents and determination of equipment suppliers consistently. It actually takes charge of the maintenance of equipment afterwards and a severe standard has been installed from the viewpoint of the maintenance management technology and the budget about the equipment level. Therefore, the equipment to be procured through this project also should be selected from among the EHP equipment list which MOH conceived, which enables this project to correspond with the MOH policy.

<Correspondence with present content of activity>

- It should be confirmed that requested equipment correspond with content of the activity and technological level of medical personnel, and the content of the medical service required in each section, to examine the validity of the equipment procurement.

For the district hospitals the equipment procurement is planned for the extension of the maternity ward and of the existing paediatrics ward. It is assumed that the plan attempt to correspond with the content of the activity by selection of essential items of equipment from among EHP standard equipment list to perform diagnosis and treatment services for the

paediatrics ward and the maternity ward, through the field survey.

Health centres offer the primary health care service in the dispensary consisting of consultation room and treatment room, etc. where a medical assistant takes charge and in the maternity ward consisting of delivery room and ward, etc. where an enrolled nurse/midwife does.

Because the number of patients exceeds compared to the number of existing medical personnel, it is necessary to carry out the medical service efficiently. Therefore, the equipment that has been used well in the present activity is assumed to target the equipment selection.

(8) Policy regarding Construction Method, Procurement Method and Works Schedule

1) Policy regarding construction method

- Geological surveys (boring surveys at district hospitals, trial digging and triaxial compression tests at health centres) indicated that the bearing capacity of soil differs on each site. Accordingly, foundations shall be adopted according to the bearing capacity on each site.
- Concerning ground structures, from the viewpoints of environmental protection, quality and schedule, reinforced concrete block structures are adopted. In this method, lintel beams shall be placed over windows and tie beams installed at wall ends in order to reinforce the structures.

2) Procurement method

- For the sake of developing local industries, it is recommended that locally made construction materials be used, and priority shall be given to procuring Malawian materials. However, since some products have quality problems, quality shall be confirmed when procuring products.
- Imported construction materials in Malawi mainly come from South Africa. Out of the construction materials that can be procured locally, when products made in Malawi are not available, materials that are robust, enable future maintenance costs to be reduced and entail little problem in future shall be used.
- According to the site surveys, beds and other medical furniture in Malawi are mainly imported from Europe and South Africa and are generally used in medical facilities. Some items such as beds can be procured from an agent in Lilongwe for cheaper prices and transportation costs than equivalent items from Japan. Moreover, considering that maintenance of such equipment following procurement is easy, it is better to use equipment for which local agents can be utilized. To ensure that quality can be secured and equipment can be definitely supplied within the works schedule, products shall be procured locally as far as possible on the premise that quality and supply levels are confirmed first.
- Equipment and materials procured from Japan and third countries shall be carried by sea as far as Beira in Mozambique and from there they shall be carried overland to each site. Trunk

roads have damaged paving and vehicles are subject to extreme shaking during transportation. Some of the equipment and materials will need to be packed in such a way to sufficiently withstand shock, humidity and high temperatures, etc.

3) Works schedule

- The facilities plan targets 17 facilities that are three district hospitals in Rumphi, Mzimba and Kasungu Districts (two paediatric wards and one Maternity ward) as well as 14 health centres in four districts. These 17 facilities shall be divided among three groups with each group responsible for constructing five or six facilities. Each construction group shall further divide facilities into two or three each, and the foundation works of each small group shall be staggered in order to keep the numbers of craftsmen down. Moreover, having fewer workers get used to the sites will lead to higher work efficiency and quality. In the event where locally available materials are procured and local methods are adopted in accordance with this approach, it will be possible to complete the works in around 10 months.
- The rainy season in Malawi lasts from October to March, and unpaved roads in hilly regions where health centres are located become almost impassable at this time. Accordingly, materials procurement plans shall be compiled in such a manner that delivery problems during the rainy season do not lead to works delays, for example, the necessary construction materials shall be carried onto sites before the onset of the rainy season.
- In the facilities plan, the only equipment that requires installation work is the solar power generation systems. Since the solar panels are installed outside irrespective of the construction works, a separate installation implementation plan shall be compiled. Since this equipment is intended for 52 sites scattered over a wide area and it will be necessary to complete installation on time, two installation teams shall be organized to complete the works in around one month. In the Project, apart from the solar equipment, since equipment that does not require installation work will also be supplied to the newly constructed facilities, implementation plans that enable equipment to be immediately carried in following completion of the construction work shall be adopted to ensure that supply and installation are completed efficiently and in short time.

2-2-2 Basic Plan (Facilities Design/Equipment Plan)

(1) Outline of the Project

Field surveys for the Basic Design Study were implemented from February 27 to March 25, 2006. The following table shows a comparison between the contents requested at this time in discussions with the Ministry of Health and the contents that were finally requested at the time of the Draft Basic Design Report (implemented from August 10 to August 17, 2006) that was compiled from the site surveys and analysis in Japan.

Table2-7 Transition of Requested Component

Building Construction				
Location and Type of building	Basic Design Survey		Explanation of Draft Report	
	Number of Building	Outline of requested component	Number of Building	Outline of final requested component
Rumphi district Paediatric Ward	1	300 m ² , Single story building	1	298.69 m ² (Corridor 89.36 m ²) Single story building
Maternity Ward	1	300 m ² , Single story building	1	401.28 m ² (Corridor 19.67 m ²) Single story building
Mzimba district Paediatric ward	1	300 m ² , Single story building	1	298.69 m ² (Corridor 89.36 m ²) Single story building
Maternity Ward	1	300 m ² , Single story building	0	Existing number of beds is enough.
Kasungu District Paediatric Ward	1	300 m ² , Single story building	0	Omitted because Paediatric Ward is under construction by Japanese grass root grant aid.
Maternity Ward	1	300 m ² , Single story building	0	Other scheme of assistance is on going in the same compound, then it was omitted.
District Hospital Total	6		3	
Rumphi District Health Centre	3	Dispensary or Maternity 200 m ² , Single story building	2	Dispensary 197.70 m ² Single story 1 Maternity 194.37 m ² Single story 1
Mzimba District Health Centre	5	Dispensary or Maternity 200 m ² , Single story building	4	Dispensary 197.70 m ² Single story 2 Maternity 194.37 m ² Single story 2
Kasungu District Health Centre	5	Dispensary or Maternity 200 m ² , Single story building	5	Dispensary 197.70 m ² Single story 3 Maternity 194.37 m ² Single story 2
Lilongwe district Health Centre	3	Dispensary or Maternity 200 m ² , Single story building	3	Dispensary 197.70 m ² Single story 2 Maternity 194.37 m ² Single story 1
Health Centre Total	16		14	
Equipment Procurement				
Type of building	Number of building	Outline of requested component	Number of Building	Outline of final requested component
District Hospital	6	Patient beds, bed side cabinet and screen	3	Procurement of patient's beds and bedside lockers. Screen is standard furniture and it was omitted. Other equipment are provided by PAM.
Health Centre	56	Dispensary: Sphygmomanometer, Minor surgical sets, instrument set	55	Procurement of medical equipment for Examination rm., treatment rm., dressing rm. and immunization. Sterilizer cannot use because staffs no understand how to use it.
		Maternity: labour beds, deliver table, suction units, resuscitators		Procurement of medical equipment for Antenatal ward, post natal ward and labour and delivery room

(2) Reasons for Changes in Requested Contents

The following paragraphs describe the contents of changes made to the request between the contents

that were confirmed with the Ministry of Health during the Basic Design Study site surveys and the contents that were reached by the time of the Draft Basic Design Report.

1) Mzimba District Hospital, Maternity ward

This was omitted from the request after it was found that the current ward has enough beds and the Ministry of Health dropped its request.

2) Kasungu District Hospital, Maternity ward and Paediatric ward

This was omitted from the request because the Government of Japan is already constructing a paediatric ward under grass roots grant aid and there is no need for the same work. Since it would be difficult to conduct assistance on the same site where another scheme of assistance is being conducted, this was removed from the request.

3) Rumphi District, RHC-1 Chitimba Health Centre

A Maternity and Dispensary connected by a connecting corridor were constructed according to standard design in 1988. Since the buildings are relatively new and in fairly good condition apart from the roofs and damage from bats, it was deemed that the Ministry of Health can implement rehabilitation (including bat countermeasures) on its own resources, so these contents were removed from the request.

4) Mzimba District, MHC-21 Malidade Health Centre

The building is 50 years old and only one part-time medical assistant currently implements medical care activities. Since it is necessary to pass through marshland in order to reach the site, there is a strong possibility of access being restricted during the rainy season, so this was removed from the contents of the request from the viewpoints of access and works schedule.

5) Lilongwe District, LHC-3 Mbangombe 1 Health Centre

The land was owned by the community, however, following the survey the community leader called a village assembly and this voted to provide the land on which the health centre is built to the Ministry of Health. Title deed procedures were instigated and although no decision to implement aid was made in the survey stage, the Study Team confirmed the title and deed after returning to Japan and decided to add this to the request in view of the high need for construction of a Dispensary.

6) Rumphi District, RHC-2 Jalawe Health Centre

Since the site survey found that diagnostic activities were not being implemented, this site was removed from the request.

2-2-2-1 Selection of Sites and Contents of Plan

(1) Current Conditions and Cooperation Contents of District Hospitals and Health Centres targeted for Facilities Construction

The following table shows the current conditions and contents of cooperation regarding the district hospitals and health centres that are candidates for facilities construction.

Table 2-8 Survey Result of the District Hospital

Rumphi District Hospital (RDH)	Established : 1969	Ownership : MoH	Covered Population : 220,000
Validity of the requested component	<p>Patients in the Paediatric Ward and Maternity Ward increase from November to May, and the patients share the beds with the patients because the shortage of the number of beds. It is appropriate to construct Paediatric Ward because two to three patients share one bed when patients' beds are shortage. Still short, patient has to stay on floor in the Paediatric ward. There is many patients who has infectious disease and also having malnutrition problems in the Paediatric Ward, and it is necessary to instruct how to improve the nutrition to the parents, and it was requested to install kitchen which will be used for nutrition improvement instruction, the installation of kitchen was judged appropriate and it was planned in the Paediatric Ward. Infectious risk in the ward is very high because infectious disease patient and non-infectious patients are stay in the same ward. Concerning paediatric wards, the newly constructed wards shall be exclusively used for non-infectious patients (children suffering from malnutrition and surgical patients) in consideration of work efficiency and in order to reduce the risk of in-hospital infections.</p> <p>Many ANC patients and high risk delivery women are referred from health centres, and their stay in the ward rather long, so the Maternity ward always very crowded. Most of ANC problem women stay in the guardian shelter. Numbers of labour and delivery beds are not enough for delivery. It is appropriate to construct Maternity Ward.</p>		
Contents of Assistance :	<p>Facilities: Construction of Paediatric Ward and Maternity Ward. Medical Equipment: Beds with bedside cabinets</p>		

Mzimba District Hospital (MDH)	Established : 1992	Ownership: MoH	Covered Population : 570,000
Validity of the requested component	<p>It was constructed 14 years ago and large number of beds is installed compare to other district hospital, and number of beds in Maternity ward for ANC and PNC are enough, then the request for the construction of Maternity ward was dropped.</p> <p>Patients in the Paediatric Ward increase from December to May, it is appropriate to construct Paediatric Ward because two to three patients share one bed when patients' beds are shortage. Still short, patient has to stay on floor in the Paediatric ward. There are many patients who has infectious disease and also having nutrition problems in the Paediatric Ward, and it is necessary to instruct how to improve the nutrition to the parents, and it was requested to install kitchen which will use for nutrition improvement instruction, the installation of kitchen was judged appropriate and it was planned in the Paediatric ward. There is high risk of internal-infection because those patients of mal-nutrition, Malaria and Infectious diseases are hospitalized at same one ward. Concerning paediatric wards, the newly constructed wards shall be exclusively used for non-infectious patients (children suffering from malnutrition and surgical patients) in consideration of work efficiency and in order to reduce the risk of in-hospital infections.</p>		
Contents of Assistance	<p>Building: Construction of Paediatric Ward. Medical Equipment: Beds with bedside locker.</p>		

Kasungu District Hospital (KDH)	Established : 1967	Ownership : MoH	Covered Population : 608,000
Validity of the requested component	<p>Extension of Paediatric ward construction funded by Japanese grass roots grant aid is on going, so the request of the construction of Paediatric ward was dropped.</p> <p>Many ANC patients and high risk delivery women are referred from health centres, and their stay in the ward rather long, so the Maternity ward always very crowded. Most of ANC problem women stay in the ANC ward on the floor without beds to accept many patients. Number of existing labour and delivery beds are not enough for average 14 deliveries in a day.</p>		
Contents of Assistance :	<p>Facilities: There is another type of assistance from Japan is on going and it is judged that it is not appropriate to provide grant aid in the same compound, then the Maternity Ward is dropped.</p> <p>Medical Equipment: It was dropped by the same reason above.</p>		

Table 2-9 Survey Result of the Health Centres

Chitimba HC (RHC-1)	Established : 1988	Authority : MoH	Covered Population : 5,000
Validity of the requested component	<p>It was constructed 18 years ago and it is rather new compare to other health centres and it deemed that the shortage of facilities does not exist.</p> <p>Wooden structure for roof is affected by termites, and bad smell and stain on the ceiling caused many bats above ceiling. However, it would be possible to be repaired by MoH by self-finance.</p>		
Contents of Assistance	<p>Facility : The construction of facility was excluded.</p> <p>Medical Equipment : Basic medical equipment which proposed by EHP will be included.</p>		

Katowo Rural Hospital (RHC-3)	Established : Maternity (1948), Dispensary (1957)	Authority : MoH	Covered Population : 19,700
Validity of the requested component	<p>Maternity is overage and mal-functioned as medical facility because it was constructed 58 years ago. Average number of delivery per day is 1.5 and total number of delivery in a year is 541. It is appropriate to construct Maternity Ward. This number included the number of complicated delivery as the second level of medical services in the Rural Hospital. If it is only normal delivery, the number of delivery would be 1.0 per day because of covered population and same type of health centres.</p> <p>It is appropriate and efficient to divide normal delivery in health centre and complicated delivery in the Rural Hospital and rural hospital can serve proper the second level of medical service.</p>		
Contents of Assistance	<p>Facilities: The construction of Maternity.</p> <p>Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.</p>		

Mwazisi HC (RHC-6)	Established : 1978	Authority : MoH	Covered Population : 14,600
Validity of the requested component	<p>It is designed as standard design and Dispensary and Maternity was constructed in one building in 1978. This size of standard design is good for the time when it was constructed. But the number of patients increased since then, and the size of the facility become small. If the Maternity constructed and the delivery services improved, it is expected the number of delivery will be increased in this Maternity.</p>		
Contents of Assistance	<p>Facilities: The construction of Maternity.</p> <p>Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.</p>		

Emfeni HC (MHC-4)	Established : 1983	Authority : MoH	Covered Population : 20,390
Validity of the requested component	<p>It is the only one health centre which has water supply from public water out of 15 health centres which the survey team surveyed. It is designed as standard design and Dispensary and Maternity was constructed as one building in 1983. The average number of delivery in a day is 1.0, which is rather small number, but it is expected that the number of delivery would be increased after the completion of Maternity and the function of delivery services improved.</p>		

Contents of Assistance	Facilities: The construction of Maternity. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.
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Endindeni HC (MHC-6)	Established : 1981	Authority : MoH	Covered Population : 16,428
Validity of the requested component	There is a room for Dispensary in a Maternity function building. But there are many number of Dispensary diagnostic records and it had 1,022 patients in February in 2006, 50 patients in a day. It is appropriate to construct Dispensary.		
Contents of Assistance	Facilities: The construction of Dispensary. Medical Equipments: Basic medical equipment, which proposed, by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Euthini RH (MHC-9)	Established : 1987	Authority : MoH	Covered Population : 16,556
Validity of the requested component	Dispensary was constructed lately but the Maternity building is old and labour and delivery room is small and difficult to provide good delivery care services. The average number of delivery is 1.7per day but this number included complicated delivery cases as the second revel of medical services in a rural hospital. If it is only normal delivery, the number of delivery would be 1.0 per day because of covered population and same type of health centres. It is appropriate and efficient to divide normal delivery in health centre and complicated delivery in the Rural Hospital and rural hospital can serve proper second revel of medical service.		
Contents of Assistance	Facilities: The construction of Maternity. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Kafukule HC (MHC-12)	Established : Dispensary (1964), Maternity (1997)	Authority : MoH	Covered Population : 10,080
Validity of the requested component	There is a construction time difference between Dispensary and Maternity. Dispensary was constructed first in 1964 and followed by the Maternity in 1997. The condition of Maternity is good enough. The number of patients in the Dispensary is 900 in February 2006, and average number of patients is 45 in a day. This numbers of patients are too many to the existing small type of Dispensary, therefore it is appropriate to construct Dispensary.		
Contents of Assistance	Facilities: The construction of Dispensary. Medical Equipments: Basic medical equipment that proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Malidade HC (MHC-21)	Established : 1950s	Authority : MoH	Covered Population : 25,000
Validity of the requested component	There are no medical staffs except temporally medical assistant. It deemed appropriate to construct facility, but there is wet land to come to this health centre and this would make difficult to drive cars in the rainy season and make difficult to complete the construction of building in limited time. Because of this reason, construction of facility was cancelled.		
Contents of Assistance	Facilities: The construction of facility was cancelled. Medical Equipments: Basic medical equipment, which proposed, by EHP will be included.		

Chulu HC (KHC-1)	Established : Dispensary(1957), Maternity (1976)	Authority : MoH	Covered Population : 32,891
Validity of the requested component	Dispensary was constructed 50 years ago and the size and the condition of the building is not good for the existing number of patients. Average numbers of patients are 118 per day and it deemed appropriate to construct Dispensary.		
Contents of Assistance	Facilities: The construction of Dispensary. Medical Equipments: Basic medical equipment, which proposed, by EHP will be		

	included. Lighting fixture by solar system will be installed at Delivery room and Labour room.
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Kapelula HC (KHC-3)	Established : 1978	Authority : MoH	Covered Population : 35,000
Validity of the requested component	It is designed as standard design and Dispensary and Maternity was constructed in one building in 1978. This size of standard design is good for the time when it was constructed. But the number of patients increased since then, and the size of the facility become small. If the Maternity constructed and the delivery services improved, it is expected the number of delivery will be increased in this Maternity. If the existing part of Maternity renovated as a part of Dispensary, the function of Dispensary would be improved. It deemed appropriate to construct Maternity.		
Contents of Assistance	Facilities: The construction of Maternity. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Simulemba HC (KHC-8)	Established : 1978	Authority : MoH	Covered Population : 51,000
Validity of the requested component	Dispensary and Maternity were constructed independently in a same year. Both of the building designs were standard design but the sizes of the facilities are become small compare to the existing number of patients. Average numbers of out patients are 50 per day and it is necessary to have an enough size of facility, and it deemed appropriate to construct Dispensary.		
Contents of Assistance	Facilities: The construction of Dispensary. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Khola HC (KHC-10)	Established : 1960s	Authority : MoH	Covered Population : 30,357
Validity of the requested component	It was constructed 50 years ago, and Dispensary and Maternity function are in a one building. The size becomes small and the condition of building is critical by the age of the building. The numbers of out patients are as many as 60 in a day, and the staffs requested one building which has Dispensary and Maternity but survey team proposed to construct Dispensary and renovate existing building to Maternity, and this proposal accepted.		
Contents of Assistance	Facilities: The construction of Dispensary. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Chamwabvi Dispensary (KHC-11)	Established : 1980	Authority : MoH	Covered Population : 27,000
Validity of the requested component	It was found out that this is not health centre but Dispensary when survey team visited there. There are more than 45 patients in the Dispensary, registered nurse and HSAs are providing medical services. There is no Maternity around this area, and it is important thing to have Maternity function to secure safe delivery in this area. It deemed appropriate to have Maternity. MOH promised to assign medical assistant before construction completion of Maternity. It would be a health centre after construction completion of the Maternity.		
Contents of Assistance	Facilities: The construction of Maternity. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Chiwamba HC (LHC-1)	Established : Maternity(1971), Dispensary (1987)	Authority : MoH	Covered Population : 55,800
Validity of the requested component	There are time difference of the construction of Maternity and Dispensary but they are connected by the corridor. It has passed 20 years since Dispensary was constructed. There are many covered population and it conjunct by the average numbers of 70 patients per day. Dispensary has many rooms for public health, immunization ,		

	injection, environmental health and this make difficult to serve ordinary medical services by the small size of examination room. It deemed appropriate to construct Dispensary.
Contents of Assistance	Facilities: The construction of Dispensary. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.

Mtentera HC (LHC-2)	Established : Maternity(1986), Dispensary (1985)	Authority : MoH	Covered Population : 45,311
Validity of the requested component	Dispensary and Maternity were constructed independently by the standard design and connected by roofed corridor. Coverage population is too many because it locates at Lilongwe and the size of the facilities are become small compare to the existing number of patients. Average numbers of out patients are 94 per day and it is necessary to have an enough size of facility, and it deemed appropriate to construct Maternity and renovate existing Maternity to Dispensary to expand the function of dispensary.		
Contents of Assistance	Facilities: The construction of Maternity. Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

Mbangombe-1 HC (LHC-3)	Established : 1986	Authority : MoH	Covered Population : 12,000
Validity of the requested component	<p>This health centre has only Maternity function only but it extend the medical services both of Maternity and Dispensary, and the size and function of the health centre is shortage. Number of out patients is averagely 65 per day and number of delivery is 20 – 25 per month. Damage by the termites in the wooden roof structure is very serious, if it is not exterminate termites, it does not need so much time to collapse the roof structure. Request for construction of Dispensary and Maternity, but Dispensary has priority than Maternity and it was agreed to construct Dispensary.</p> <p>The land was owned by the community, however, following the survey the community leader called a village assembly and this voted to provide the land on which the health centre is built to the Ministry of Health. Title deed procedures were instigated and although no decision to implement aid was made in the survey stage, the Study Team confirmed the title and deed after returning to Japan and decided to add this to the request in view of the high need for construction of a Dispensary.</p>		
Contents of Assistance	Facilities: The construction of Dispensary. Confirmation of ownership of construction site was transferred to public land Medical Equipments: Basic medical equipment which proposed by EHP will be included. Lighting fixture by solar system will be installed at Delivery room and Labour room.		

2-2-2-2 Site and Facilities Layout Plan

(1) Shape of Sites

1) Rumphi District Hospital

Rumphi District Hospital is located on an expansive and flat site of approximately 4.5 ha, and the existing wards are situated as shown in the following diagram.

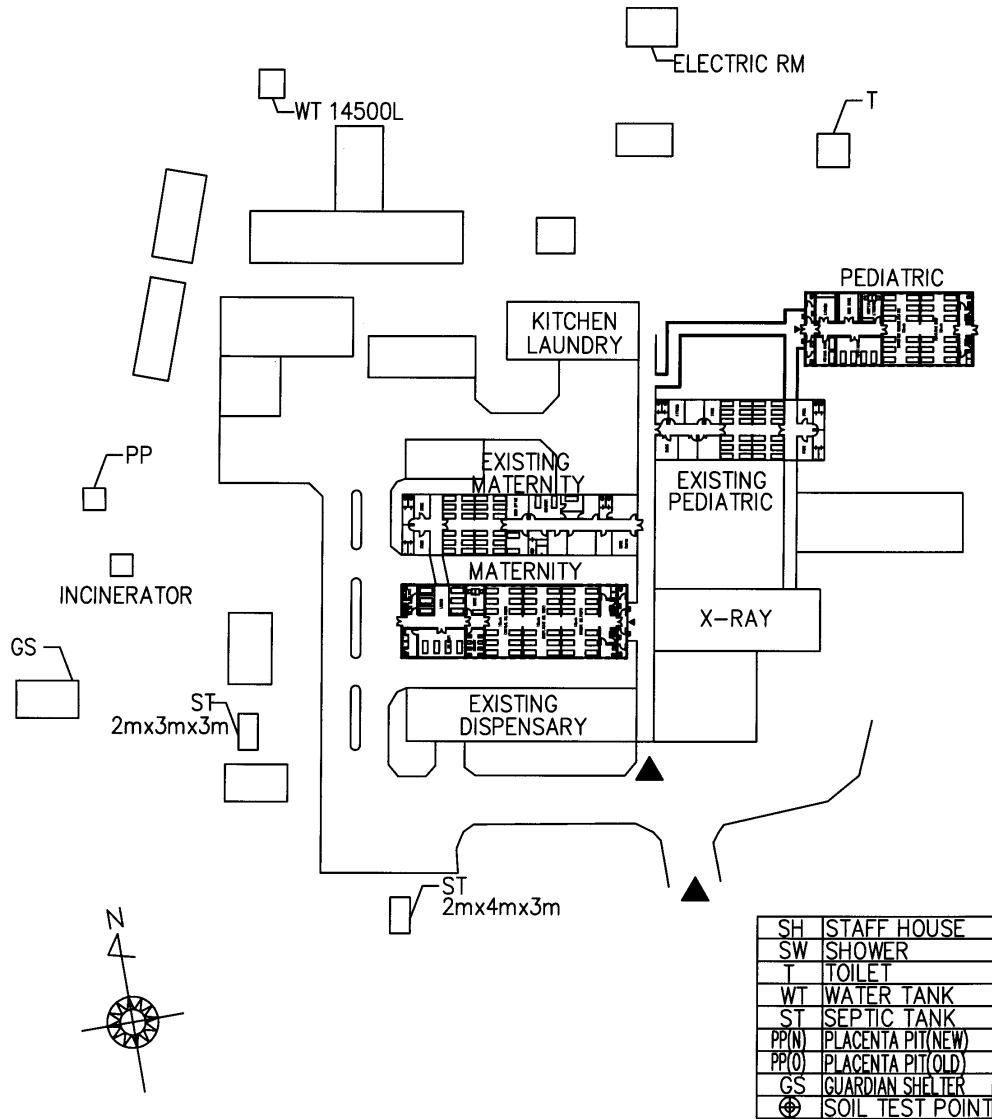


Fig-2-1 Rumphi District Hospital Site Plan

The site is situated around 200 m from a trunk road away from traffic noise and in a good environment surrounded by trees. However, because there is no perimeter fence, ordinary citizens use the hospital grounds for passage and this poses a security risk, although a guardsman is stationed at night. Rumphi is the seat of the government offices of Rumphi District and is equipped with infrastructure facilities such as public water supply, electricity, fixed and mobile

telephones and a private generator, so the site conditions are good.

The scheduled site of the new Paediatric ward is idle land located to the upper right of the existing ward. Although it is necessary to cut trees and remove roots, the new building can be constructed in a place well related to the existing Paediatric ward. The new ward shall be dedicated to non-infectious ailments so that it can deal with EHP Paediatric diseases and nutritional improvement. Accordingly, the ward will be exclusively used for nutritional disorder patients and surgical patients who require relatively little nursing. The ward shall also be combined with a kitchen for conducting nutritional guidance. Moreover, a connecting corridor shall link the wards in order to keep transfer distances short.

The scheduled site of the Maternity ward lies between the existing Maternity ward building and the dispensary and administration building, therefore enabling the new ward to be constructed with good connection to the existing Maternity ward. Accordingly, the new ward shall be exclusively used as a post-natal ward, while the existing ward shall be used for antenatal care with a view to dividing the treatment functions and limiting the burden on nursing staff. The post-natal and antenatal wards shall be linked by a connecting corridor, making it easy for pregnant women to be transferred to the labour and delivery rooms in the new building.

The existing facilities are arranged on the east-west axis to ensure that direct sunlight in the morning and evening does not infiltrate rooms, and a similar layout shall be adopted with the Project facilities too.

2) Mzimba District Hospital

The land around Mzimba District Hospital consists of gentle hills. The site area covers approximately 22.5 ha and slopes gently towards the south, thereby creating a good local environment. Land between the hospital buildings and perimeter is covered in weeds. The absence of a perimeter fence poses a security risk, however, a guardsman is stationed at night. Mzimba is the second largest town behind Mzuzu in Mzimba District and is equipped with infrastructure facilities such as public water supply, electricity, fixed and mobile telephones and a private generator, so the site conditions are good.

The existing facilities were constructed in 1992 and are relatively new and in good condition. Some construction space still exists between the existing buildings and site perimeter, however, the paediatric department side is close to a road and has no more room for additional construction. Accordingly, the new paediatric ward shall be constructed next to the existing Maternity ward and dedicated to non-infectious ailments in order to counter paediatric infections. Beds for children with nutritional disorders and external injuries and surgical patients shall be installed in order not to increase the nursing burden.

The existing facilities are arranged on the east-west axis to ensure that direct sunlight in the morning and evening does not infiltrate rooms, and a similar layout shall be adopted with the Project facilities too.

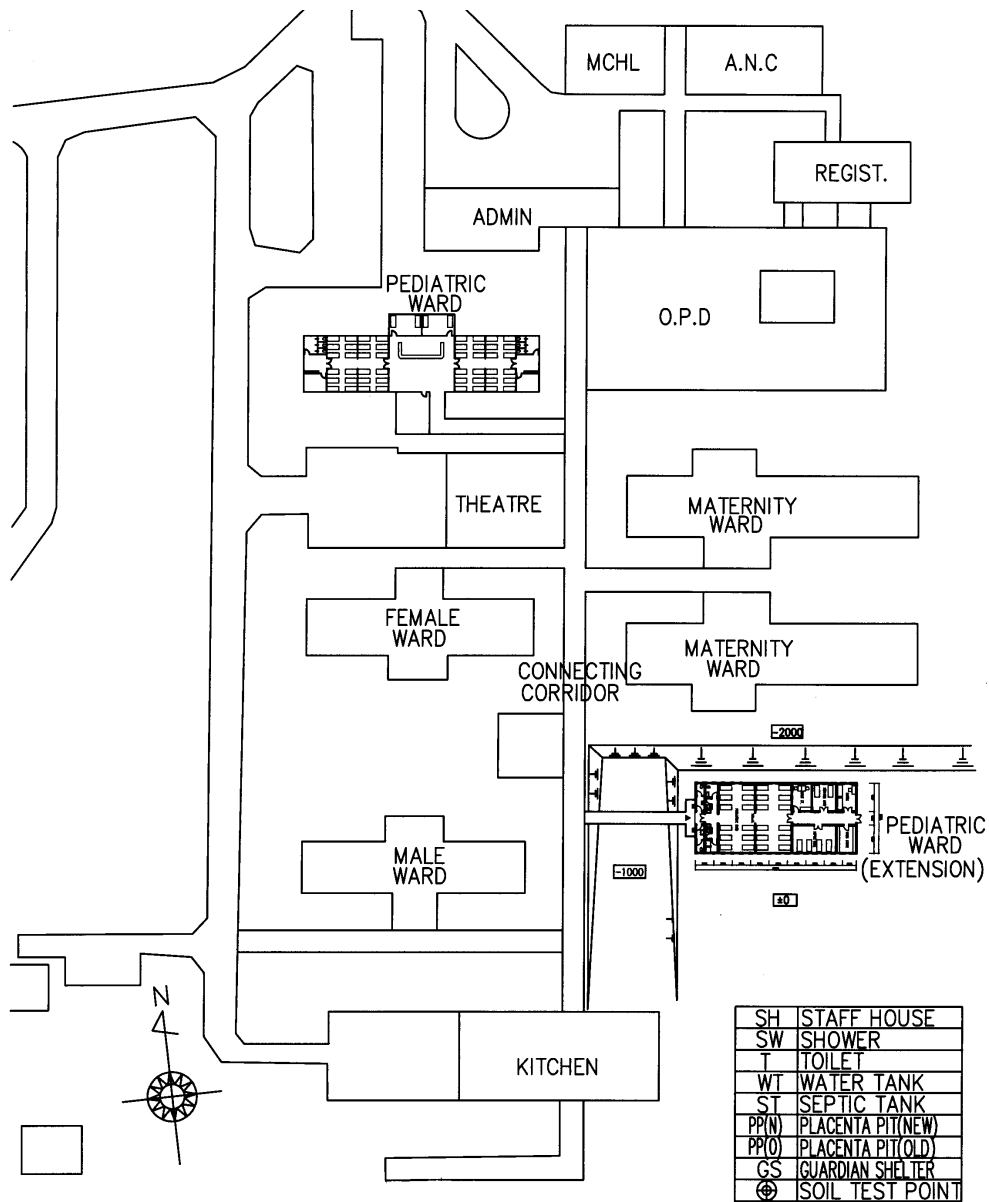


Fig. 2-2 Mzimba District Hospital Site Plan

3) Health Centres

The sites of health centres are public land provided by communities. Many sites are flat and the surrounding land consists of fields. The following table shows the area of each health centre site. Compared to the small number of facilities, the area of sites is large. This is thought to be because space has been secured in order to expand the scale of health centres and elevate their status to rural hospitals in future through building staff houses, outdoor toilets and placenta treatment pits. Currently, the absence of perimeter fences poses a security risk, however, guardsmen are stationed at night

Concerning infrastructure facilities, almost all health centres obtain water from wells (excluding MHC-4 Emfeni), and none of the targeted health centres are connected to the public electricity supply. Mobile phones can be used at a few health centres, however, solar-powered

radio communications are used at numerous locations.

Table 2-10 Site Area and Communication Method at Health Centres

No.	Name of Facilities	Site Area (ha)	Mobile Phone	Radio Communication
RHC-1	Katowo Rural Hospital	3.07		○(Police)
RHC-3	Mwazisi Health Centre	3.78	○ (1.5km)	
MHC-4	Emfeni Health Centre	6.50	○	
MHC-6	Endindeni Health Centre	1.60	○	○
MHC-9	Euthini Rural Hospital	5.68		○(out of order)
MHC-12	Kafukule Health Centre	1.76		○
KHC-1	Chulu Health Centre	2.04		○
KHC-3	Kapelula Health Centre	3.44		○
KHC-8	Simulemba Health Centre	3.88		○
KHC-10	Khola Health Centre	2.19		○
KHC-11	Chamwabvi 1 Dispensary	4.64	○	○
LHC-1	Chiwamba Health Centre		○	○
LHC-2	Mtentera Health Centre		○	○
LHC-3	Mbangombe 1 Health Centre			○

Since the existing medical setups will be maintained even after completion of the new buildings, space shall be secured between buildings in a manner that doesn't add to the workload of staff. In particular, layouts shall be planned so that privacy is secured between patients in outpatient dispensaries and Maternity wards. In future, since it is also planned to construct staff houses and guardian shelters, the medical facilities here shall be located in areas that do not hinder these plans.

Facilities shall be arranged on the east-west axis to ensure that direct sunlight in the morning and evening does not infiltrate rooms. Even if existing facilities are arranged on the north-south axis, the east-west axis shall be adhered to in the Project.

The basic design drawings are in 3-2-3 Basic Design Drawings show the layouts of each health centre.

2-2-2-3 Building Plan

(1) Scope of the Project

The following paragraphs outline the plans for the district hospitals.

**Table 2-11 Project Contents of Target Facilities
(According to Facilities Construction and Equipment Supply)**

Hospital Name	District	Category	Target of Plan	
			Building Construction	Medical Equipment
① Rumphi District Hospital	Rumphi	The second medical service	Paediatric Ward, Maternity Ward	○ ○
② Mzimba District Hospital	Mzimba	The second medical service	Paediatric Ward	○
③ Kasungu District Hospital	Kasungu	The second medical service	—	—

(2) Necessary Rooms in Each Ward

Upon confirming the activities, room composition and areas of existing facilities and examining the standard composition of rooms in the site surveys, the following necessary rooms shall be planned based on the contents discussed and agreed with the Ministry of Health.

In examining the necessary rooms, in line with the design policy of planning the minimum required room composition so as not to increase the burden of medical staff, the composition of rooms in each department shall be as indicated in the following table. In paediatric departments, inpatient wards shall be constructed together with the necessary nurse stations, medicine stores, toilets, shower rooms, corridors and connecting corridors, and kitchens shall also be provided for conducting nutritional guidance as an element of EHP support. Maternitys shall comprise inpatient wards, nurseries, labour and delivery rooms (which were in short supply), nurse stations, toilets, shower rooms, corridors and connecting corridors.

Table 2-12 Necessary Rooms in the Paediatric Ward and Maternity Ward

Rumphi District Hospital Paediatric Ward	Rumphi District Hospital Maternity Ward	Rumphi District Hospital Paediatric Ward
Room name	Room name	Room name
(1)Extension	(1)Extension	(1)Extension
① Nutrition Rehabilitation	① Surgical Operation	① Nutrition Rehabilitation
② Surgical Operation	② Complicated Delivery	② Surgical Operation
③ Serious Case (1)	③ Normal delivery	③ Serious Case (1)
④ Serious Case (2)	(2) Labor Room	④ Serious Case (2)
(2) Nurse Station	(3) Delivery Room	(2) Nurse Station
(3) Kitchen(For Guidance)	(4) Nurse Station	(3) Kitchen(For Guidance)
(4) Drug Store	(5) Nursery	(4) Drug Store
(5) Public Space	(6) Sluice	(5) Public Space
① Toilet and shower for patients	(7) Public Space	① Toilet and shower for patients
② Toilet for Public (M) (F)	① Toilet and shower for patients	② Toilet for Public (M) (F)
③ Passage	② Toilet for Public (M) (F)	③ Passage
④ Connecting corridor (Wash basin)	③ Passage	④ Connecting corridor (Wash basin)
	④ Connecting corridor (Wash basin)	

(3) Scale Setting of necessary Rooms

<Examination of Rumphi District Hospital Paediatric Ward>

- ① Planned number of beds in the paediatric ward (24 beds)

The following table shows the number of patients by disease in Rumphi District Hospital paediatric ward (2005). There were 2,637 patients in the year. The top diseases in order were malaria, pneumonia/ARI, anaemia, trauma and diarrhoea. Malaria inpatients peaked at 107 in January and were more common between the months of December and May.

Table2-13 Case and No. of Admittance in the Paediatric Ward in Rumphi District Hospital (2005)

	Jan.	Feb.	Mar	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.	Total	Average
Malaria	107	97	86	99	97	50	19	19	45	56	59	60	794	66.2
Pneumonia/AR	37	91	89	76	42	32	31	44	48	15	66	30	601	50.1
Anaemia	45	33	38	22	22	14	11	5	7	13	20	26	256	21.3
Trauma/RTA	16	22	23	9	14	21	8	4	10	13	21	20	181	15.1
Diarrhoea	5	4	1	7	23	13	12	7	15	3	28	20	138	11.5
Malnutrition	9	12	13	4	2	1	2	3	0	4	5	19	74	6.2
Burns	4	1	2	5	3	4	9	5	5	4	1	3	46	3.8
Meningitis	2	3	2	0	0	2	0	0	0	1	1	0	11	1.0
Dysentery	0	0	0	1	0	0	1	0	1	1	1	0	5	0.4
Skin	2	3	2	1	1	2	2	0	0	0	0	0	12	1.0
Others	47	46	37	38	37	42	37	45	47	59	46	38	519	43.3
Admittance	274	312	293	262	241	181	131	132	178	169	248	216	2637	222.8

Source : Edited from Rumphi District Hospital data

The existing paediatric ward has 24 beds (although the registered number is only 20) and 222 hospitalised patients per month. This peaked at 312 in February when 62 beds were required. At this time the ward put two or three children together in the same bed and also had patients sleeping on the floor. Moreover, because the existing paediatric ward has no rooms for infectious diseases, it is desirable that the Malawi side partitions part of the existing ward off as an infections room.

Calculation of the necessary number of beds:

	Annual Cases	Days in Hospital	Per Day	Needed Beds	Planned Beds
Needed beds:	2637 cases/year	× 6 days	÷ 365 days	=43.3 beds	≅ 44 beds
Planned beds:	44 beds	—24 beds		=	20 beds

The nursing setup on the paediatric ward consists of 8 staff as shown below. There were approximately 500 graduates per year from nursing colleges (10 colleges in all) in Malawi in 2005, and the number of graduates with clinical officer qualifications from the Malawi College of Health Sciences was 41. Moreover, since not all these graduates are necessarily assigned to

district hospitals and health centres, judging from the numbers of graduates and medical facilities, it will probably take a long time to increase staff numbers. Accordingly, it is planned so that the new paediatric ward admits patients with non-infectious disorders, for example children with nutritional disorders, trauma patients and surgical patients that do not impose such a heavy burden on the nursing staff.

Table 2-14 Staff Allocation in Paediatric Ward, Rumphi District Hospital

Staffs Qualification	Number
Clinical Officer	1
Nursing Officer	1
Senior Enrolled Nurse Midwife	3
Nurse Midwife Technician	1
Nurse technician	2
Total	8

Source: Edited from Rumphi District Hospital data

② Beds for seriously injured patients (4 beds)

A room with four beds surrounded by a partition wall shall be provided for observing patients with serious nutritional disorders, major surgery patients and massive trauma patients.

③ Nurse station (hospital attendant room)

The nurse station (hospital attendant room) shall be placed almost in the middle of the ward to enable the nursing officer to conduct activities more efficiently.

④ Kitchen

A kitchen shall be provided to provide guidance on cooking methods to mothers of children with nutritional disorders. Concerning fuel, electric heaters shall be adopted for safety.

⑤ Medical supplies store

The medical supplies store shall hold medical supplies issued from the hospital's central dispensary with a view to mitigating the load of the nursing officer.

⑥ Toilet, shower and sluice in the delivery room

A toilet, shower and sluice (for washing dirty objects) shall be provided for expectant mothers on the side of the labour and delivery room.

⑦ Toilets, showers and sinks in the hospital ward

Toilets and sinks shall be installed on both sides of the entrance to the maternity ward, and entrants to the ward shall be encouraged to wash their hands. The toilets and showers on the entrance side shall be for use by inpatients and attendant visitors.

<Examination of the Rumphi District Hospital Maternity Ward>

① Planned number of beds in the maternity ward (36 beds)

As is shown in the following table, in fiscal 2003 the ward handled 2,522 ordinary deliveries, 565 abnormal deliveries and 347 obstetric procedures. The number of beds is calculated from these figures.

Table2-15 Number of Patients for Maternity Ward in Rumphi District Hospital (2003)

	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Total	Average
Ordinary Delivery	200	211	264	214	230	185	196	245	192	223	181	181	2522	210
High Risk Delivery	48	33	55	41	47	54	61	44	48	52	46	36	565	47
Operation Case in Maternity	31	23	30	28	27	31	31	27	37	31	22	29	347	29
ANC registration	657	773	795	876	898	898	895	737	660	749	719	453	9128	760
Total No. of Admittance	176	242	221	253	313	292	281	273	228	274	204	197	2954	246

Source: Edited from Rumphi District Hospital data

Calculation of the necessary number of beds:

	Annual Cases	Days in Hospital	Per Day	Needed Beds	Planned Beds
Normal delivery:	2522/year	× 2 days	÷ 365 days	= 13.8 beds	≅ 14 beds
Complicated	565/year	× 7 days	÷ 365 days	= 10.8 beds	≅ 11 beds
Obstetric procedure:	347/year	× 10 days	÷ 365 days	= 9.5 beds	≅ 10 beds
Total					35 beds < 36

Therefore, 12 normal delivery beds, 12 abnormal delivery beds and 12 surgical patient beds are planned. Moreover, since obstetric procedure patients require close observation following operations, these beds shall be located closest to the nurse station.

② Delivery tables (4 tables) and labour beds (6 beds)

The ward handles 3,087 deliveries including normal and abnormal deliveries per year. Since each delivery table can handle two deliveries per day, a total of four delivery tables are planned. The number of labour beds is planned as 1.5 times the number of delivery tables, i.e. 6 beds. Labour beds that can be used as delivery tables when the delivery beds are full shall be procured.

Calculation of the necessary number of delivery tables:

	Annual deliveries	Rotation	Per day	Needed tables	Planned tables
Number of delivery tables:	(2522 + 565)/year	÷ 2 cases/table/day	÷ 365 days	= 4.2 tables	≅ 4 tables
Planned number:					4 tables

③ Nursery (newborn infant treatment room: 8 cots)

The Ministry of Health encourages rising by mother's milk, and mothers and newborn babies sleep in the same bed, however, immediately after delivery (approximately the first two hours) and for cases where sharing the same bed is difficult, the status of babies is observed in newborn infant cots. Eight cots are planned in line with the daily number of births. Moreover, these shall be located close to the nurse station to enable easier treatment by nursing officer.

④ Nurse station

The nurse station shall be placed between the hospital ward and the labour and delivery rooms so as to enable the nursing officer to conduct activities more efficiently.

⑤ Toilet, shower and sluice in the delivery room

A toilet, shower and sluice (for washing dirty objects) shall be provided for expectant mothers on the side of the labour and delivery room.

⑥ Toilets, showers and sinks in the hospital ward

Toilets and sinks shall be installed on both sides of the entrance to the maternity ward, and entrants to the ward shall be encouraged to wash their hands and maintain the sanitary environment before they enter. The toilets and showers on the entrance side shall be for use by inpatients and attendant visitors.

Moreover, the existing maternity wards shall be used as an ante-natal ward following completion of the new ward. Currently high-risk pregnancies referred and transferred from the HC as well pregnant women that bypass the HC in search of a better environment have to sleep in the guardian house (usually reserved for attending visitors) due to the shortage of beds, so this situation is in need of improvement.

<Examination of Mzimba District Hospital Paediatric Ward>

① Planned number of beds in paediatric ward

The following table shows the number of patients by department in Mzimba District Hospital paediatric ward. On average there are 297 cases per month, of which the vast majority (236) are medical cases.

Table2-16 Case and No. of Admittance in the Paediatric Ward in Rumphi District Hospital (2005)

	Jan.	Feb.	Mar	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.	Total	Averag
Medical	234	280	306	373	264	187	177	183	140	134	200	352	2830	236
Surgical	48	62	58	48	38	41	47	61	75	57	92	76	703	59
Dental	1	0	0	0	0	0	0	2	0	0	0	0	3	0
Eye	1	1	2	0	2	3	2	4	5	3	2	1	26	2
Total	284	343	366	421	304	231	226	250	220	194	294	429	3562	297

Source: Edited from Rumphi District Hospital data

When viewed in terms of disease, the most common reasons for hospitalisation are malaria, acute gastroenteritis (diarrhoea), acute respiratory infections and malnutrition, and there are more than 100 cases roughly during the rainy season from December to April.

Table 2-17 Case and No. of Admittance in the Paediatric Ward in Mzimba District Hospital (2005)

	Jan.	Feb.	Mar	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.	Total	Averag
Malaria	164	136	169	192	100	33	72	84	68	53	97	160	1328	110
Diarrhoea	27	12	16	23	52	26	15	17	25	12	11	42	278	23
Pneumonia/ARI	21	34	78	82	57	34	41	35	36	36	23	40	527	44
Malnutrition	16	14	10	8	6	2	10	5	5	10	15	12	113	9
Total	228	196	273	305	215	95	138	141	134	111	146	254	2246	187

Source: Edited from Mzimba District Hospital data

Calculation of the necessary number of beds:

	Annual Cases	Days in Hospital	Per Day	Needed Beds	Planned Beds
Needed beds:	3562 cases/year	× 7 days	÷ 365 days	= 68.3 beds	≈ 69 beds
Planned beds:	69 beds	— 48 beds		=	21 beds

The annual number of hospitalised patients is reported as 3,562 and the average hospitalization time is 7 days. The necessary number of beds is calculated as 69; however, since there are only 48 at present, this means there is a shortage of 21. In consideration of this, a new paediatric ward (24 beds) shall be constructed. The peak month for hospitalisations is December, when there are 429 admitted patients (15 per day) and the required number of beds is 100, leading to a shortage of 52 beds. Currently, however, two or three patient is accommodated in single beds and the guardian shelter that is intended for attendant family members is also used.

Mzimba District Hospital is staffed by 21 medical personnel. There are nine core staff members on the paediatric ward including a clinical officer, registered nurses and auxiliary nurses, etc. It is thought that time will be required to increase the staff numbers because of the slow rate of medical staff development in the country. Accordingly, it is planned so that the new paediatric ward admits patients with non-infectious disorders, for example children with

nutritional disorders, trauma patients and surgical patients that do not impose such a heavy burden on the nursing staff.

Table 2-18 Staff Allocation in Paediatric Ward, Mzimba District Hospital

Staffs Qualification	Number (Person)	School History
Clinical officers	1	MSCE/Diploma
Ward in Charge	1	BSC
Registered Nurse	5	MSCE
Auxiliary Nurse	4	MSCE
Patient Attendant	1	PSLC
Hospital Attendant	6	MSCE
Ward Clark	1	MSCE
Nurse Technician	2	MSCE
Total	21	

Source: Edited from Mzimba District Hospital data

As beds for patients with non-infectious diseases, 12 beds for children with nutritional disorders and 12 beds for surgery patients shall be provided.

② Beds for seriously injured patients (2 beds) (4 beds)

A room with four beds surrounded by a partition wall shall be provided for observing patients with serious nutritional disorders, major surgery patients and massive trauma patients.

③ Nurse station (hospital attendant room)

The nurse station (hospital attendant room) shall be placed almost in the middle of the ward so as to enable the nursing officer to conduct activities more efficiently.

④ Kitchen

A kitchen shall be provided to provide guidance on cooking methods to mothers of children with nutritional disorders. Concerning fuel, electric heaters shall be adopted for safety.

⑤ Medical supplies store

The medical supplies store shall hold medical supplies issued from the hospital's central dispensary with a view to mitigating the load of the nursing officer.

⑥ Toilet, shower and sluice in the delivery room

A toilet, shower and sluice (for washing dirty objects) shall be provided for expectant mothers on the side of the labour and delivery room.

⑦ Toilets, showers and sinks in the hospital ward

Toilets and sinks shall be installed on both sides of the entrance to the maternity ward, and entrants to the ward shall be encouraged to wash their hands. The toilets and showers on the entrance side shall be for use by inpatients and attendant visitors.

(4) Setting of the Scale of District Hospitals

The following table shows the rooms and room areas required for the paediatric and Maternities in district hospitals in the project. In setting the floor area of each room, existing room areas in the target facilities were surveyed and staff and patient numbers were taken into overall account upon referring to the floor area standards of medical facilities in Japan (materials amended by the Architectural Institute of Japan).

Table 2-19 Proposed Room Size of Planned Room

■ Rumphi District Hospital							
Padiatric ward		298.68m ² (Exempt Corridor)		Maternity Ward		401.28m ² (exempt Corridor)	
Room name	W	H	Area (m ²)	Room name	W	H	Area (m ²)
Nutrition Rehabilitation (12beds)	6.00	X	11.40 = 68.40	Surgical Operatin (12beds)	6.00	X	11.40 = 68.40
Surgical Operation (12beds)	6.00	X	11.40 = 68.40	Complicated Delivery (12Beds)	6.00	X	11.40 = 68.40
Serious Case (2) (4beds)	4.60	X	7.25 = 33.35	Normal Delivery (12beds)	6.00	X	11.40 = 68.40
Serous Case (1) (2beds)	4.60	X	3.25 = 14.95	Delivery room (4beds)	7.50	X	4.60 = 34.50
Nurse Station	4.60	X	3.38 = 15.55	Labor Room (6beds)	7.50	X	6.80 = 51.00
Kitchen(for Guidance)	3.25	X	4.60 = 14.95	Nursary	4.60	X	3.00 = 13.80
Drug Store	3.87	X	4.60 = 17.80	Nurse Station	4.60	X	3.00 = 13.80
Toilet for Patients (1)	2.20	X	4.60 = 10.12	Toilet/Sluice	2.45	X	4.60 = 11.27
Toilet and Shower for Patients (1)	2.20	X	4.60 = 10.12	Toilet and shower for Patients	2.45	X	4.60 = 11.27
Toilet for Public (M)	1.50	X	4.60 = 6.90	Passage -1	4.25	X	2.20 = 9.35
Toilet for Public (F)	1.50	X	4.60 = 6.90	Passage -2	2.20	X	3.00 = 6.60
Passage -1	2.20	X	2.20 = 4.84	Passage-3	2.20	X	2.45 = 5.39
Passage -2	2.20	X	10.50 = 23.10	Toilet for Patients (1)	4.60	X	2.75 = 12.65
Passage-3	2.20	X	1.50 = 3.30	Toilet & Shower for Patients (2)	4.60	X	2.75 = 12.65
Connecting Corridor(Wash Basine)			89.36	Toilet for Public (M)	1.50	X	4.60 = 6.90
Floor Area Total			388.04	Toilet for Public (M)	1.50	X	4.60 = 6.90
				Connecting Corridor(Wash Basine)			19.67
				Floor Area Total			420.95
■ Mzimba District Hospital							
Padiatric Ward		298.68m ² (exempt corridor)					
Room Name	W	H	Area (m ²)				
Nutrition Rehabilitation (12beds)	6.00	X	11.40 = 68.40				
Surgical Operation (12beds)	6.00	X	11.40 = 68.40				
Serious Case (2) (4beds)	4.60	X	3.87 = 17.80				
Serous Case (1) (2beds)	4.60	X	7.25 = 33.35				
Nurse Station	4.60	X	3.38 = 15.55				
Kitchen (for Guidance)	4.60	X	3.25 = 14.95				
Drug Store	4.60	X	3.25 = 14.95				
Toilet for Patients (1)	2.20	X	4.60 = 10.12				
Toilet and Shower for Patients (1)	2.20	X	4.60 = 10.12				
Toilet for Public (M)	1.50	X	4.60 = 6.90				
Toilet for Public (F)	1.50	X	4.60 = 6.90				
Passage -1	2.20	X	10.50 = 23.10				
Passage -2	2.20	X	2.20 = 4.840				
Passage-3	2.20	X	1.50 = 3.30				
Connecting Corridor(Wash Basine)			39.22				
Floor Area Total			337.90				

(5) Contents of Plans for Health Centres

1) Trends in floor plans of existing Health Centres by era

The outpatient and Maternity wards of health centres have so far undergone construction under assistance by numerous donors and community support, and standard drawings exist for each era. In examination of the plan contents, as was shown in the design policy, the contents of plans and scale of facilities shall be determined upon referring to the era-separate trends of current standard health centre designs.

① Late 1970s ~ 1980s

Many of the health centres that were constructed from the late 1960s to the 1980s have integrated outpatients dispensaries and maternity wards as illustrated below and cover a total floor area of approximately 330 m² (for example, Mwazisi Health Centre, Emfeni Health Centre, Kapelula Health Centre). These floor plans (Figure 2-1) are standard design drawings of the Ministry of Health that were designed by the Ministry of Public Works and approved by the Chief Architect in 1981.

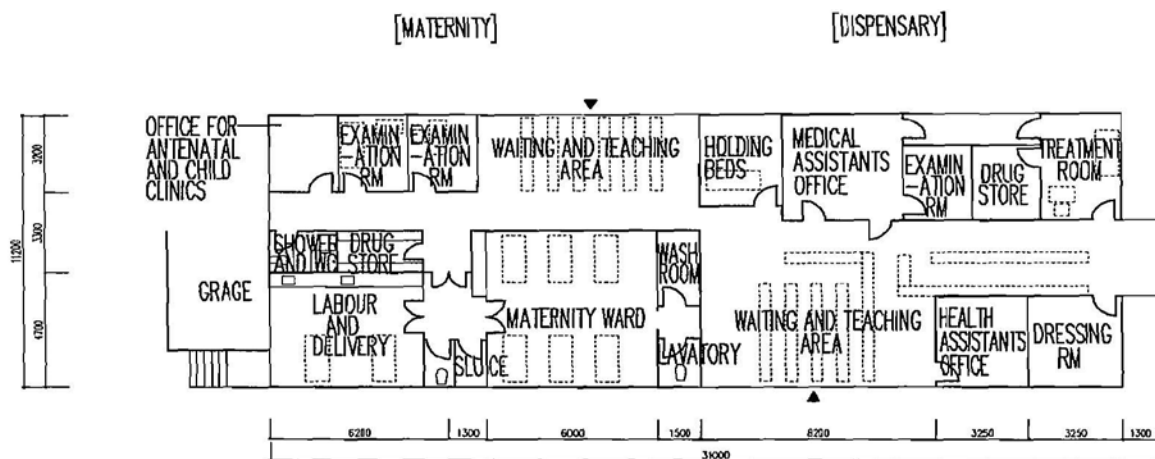
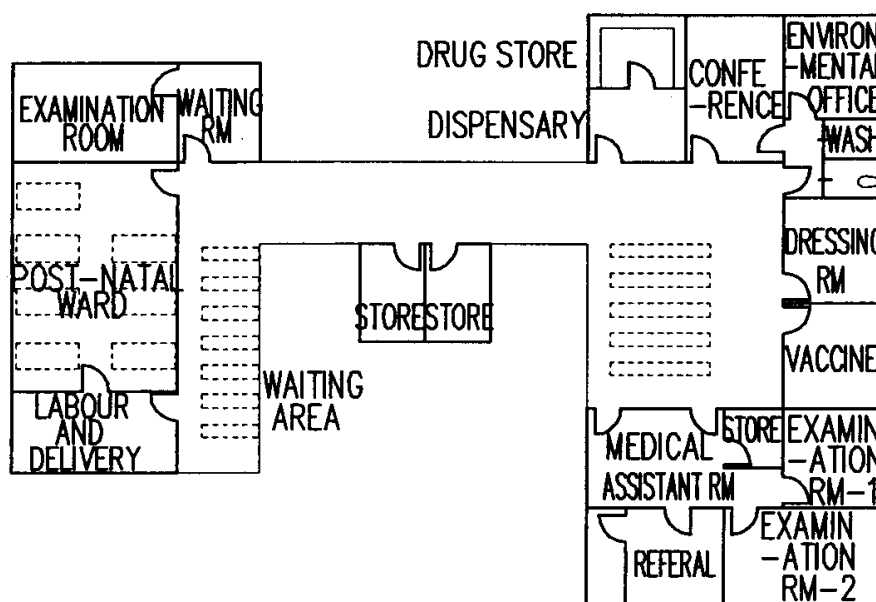


Figure 2-3 Mwazisi Health Centre Floor Plan

The features of this standard drawing are that it is composed of the minimum number of rooms and traffic lines are short and efficient for enabling medical staff to conduct their duties; however, because the maternity ward and dispensary face each other, there is a problem regarding the privacy of pregnant women. Water supply pipes are installed up to the toilets and shower booths, however, because there are no water sources, the only one of the Health Centre surveyed that had running water was Emfeni Health Centre (MHC-4).

② 1980s

In the following example of a 1980s HC, the maternity ward (approximately 100 m²) was constructed in 1971, and the outpatient dispensary (approximately 160 m²) and connecting corridor were added in 1987 (See Figure 2-2). This floor plan was prepared based on measurements made during the site survey. Following construction of the maternity ward, deliveries and ante-natal examinations were implemented in the treatment room here, and pregnant women expected to have complicated deliveries were referred to the district hospital from the referral waiting room. When the outpatient dispensary was constructed, the facility became able to conduct outpatient examinations and was raised in status to a health centre.



Completed in 1971

Extension in 1987

Figure 2-4 Chiwamba Health Centre Floor Plan

③ 1990s

As an example of health centres constructed in the 1990s, the layout plan and floor plan of Mbela Health Centre, which were approved as standard drawings by the Building Department of the Ministry of Transport and Construction in March 1993, are shown below. As is shown in these standard drawings, the Dispensary and Maternity are just under 200 m² respectively, and a connecting corridor with roof joins the waiting halls of both buildings. According to the Building Department of the Ministry of Transport and Public Works, these are the latest standard drawings and no different types have since been drafted. Accordingly, these standard drawings were examined as the newest versions.

The privacy of pregnant women is secured because the maternity ward and outpatient dispensary are separate buildings. All the necessary facilities such as staff house, guardian shelter, toilets, digestion tanks, well and laundry room are provided and all the necessary functions are available. The upper part of the maternity ward on the drawing consists of a reception area and two inspection rooms for conducting examinations; the central part consists of a waiting hall for patients waiting to be examined and a ward for pregnant women; and the lower part consists of the labour and delivery room and incidental toilets, showers and washing area. As for the outpatient dispensary, the upper part consists of a staff room, medical supplies store and medication room; the central part is the waiting hall, patient registration room, bandage room and two treatment rooms; and the lower part comprises separate men's and women's referral waiting rooms. If the scale of facilities is enlarged any more than this, it would be necessary to increase the number of permanent staff and inpatient beds and thereby raise the status of the facility to a rural referral hospital. Accordingly, this is the maximum size that a health centre can be.

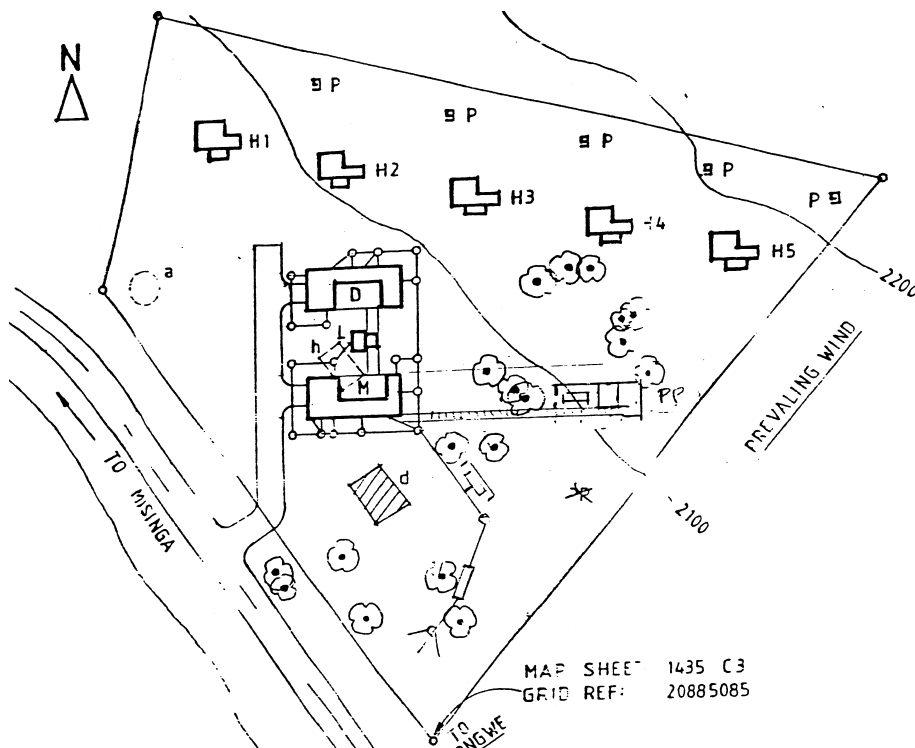
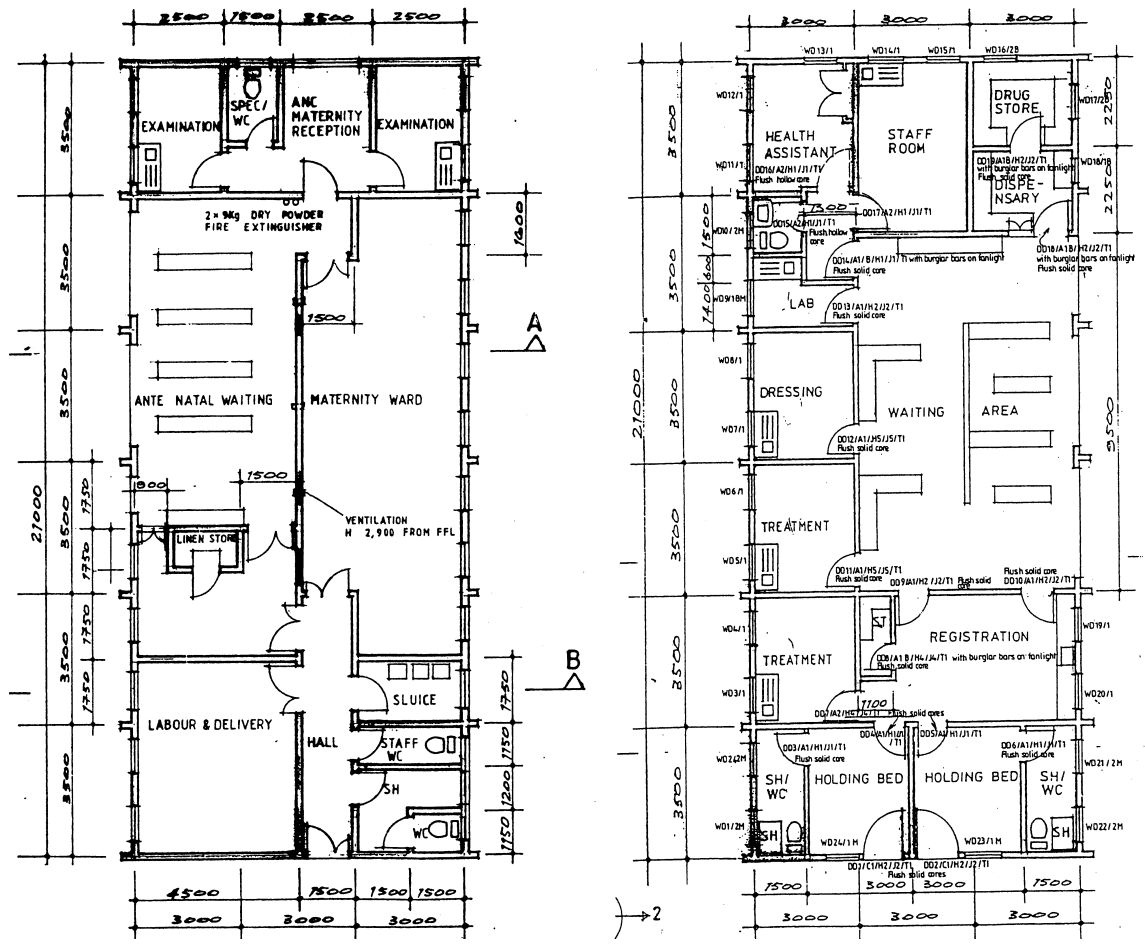


Figure 2-5 Mbela Health Centre Site Plan



Maternity Ward

Dispensary

Fig. 2-6 Plan of Standard Drawing (Mbera Health Centre)

Next table shows a comparison of building areas of health centre maternity wards and outpatient dispensaries according to each era of construction. It can be seen that Mwazisi HC, which was constructed in 1978, is composed only of the minimum required rooms. Mbela HC, which was designed in 1993, has the basic required rooms but also a reception area, registration room, a second treatment room, medication room and injection room, etc. The injection room is used by health personnel who periodically visit from the district hospital to conduct child vaccinations and immunization injections, while the treatment room is used for eye and dental examinations by visiting doctors. The advantage of these rooms is that they enable regular treatment and examination activities to be continued without being affected by the above activities.

Table 2-20 Comparison of Health Centre Area by Era

Dispensary	1970-80				1980				2006			
	Mwazisi HC 1978				Mbera HC 1993				This Project 2006			
Room Name	W		H	Area (m ²)	W		H	Area (m ²)	W		H	Area (m ²)
Medical Assistant Office	4.30	X	4.50	= 19.35					—	X	—	= —
Examination Room	2.30	X	3.20	= 7.36	3.00	X	4.50	= 13.50	5.00	X	4.00	= 20.00
Treatment Room	2.80	X	4.70	= 13.16	3.50	X	3.00	= 10.50	3.00	X	4.00	= 12.00
Dressing Rom	3.30	X	3.30	= 10.89	3.00	X	3.50	= 10.50	3.00	X	4.00	= 12.00
Storage for Medicine	2.30	X	3.20	= 7.36	3.00	X	2.25	= 6.75	3.00	X	4.00	= 12.00
Health Assistance Office	3.30	X	3.20	= 10.56	3.50	X	3.00	= 10.50	2.50	X	4.00	= 10.00
Holding Beds for Referral	2.70	X	4.00	= 10.8	3.50	X	3.00	= 10.50	2.50	X	4.00	= 10.00
Waiting Area	8.20	X	6.70	= 54.94	9.50	X	6.00	= 57.00	7.00	X	6.50	= 45.50
Waiting Area (For Injection Space)	6.50	X	3.00	= 19.50	—	X	—	= —	—	X	—	= —
Aisle	5.00	X	1.50	= 7.50	2.40	X	1.20	= 2.88	10.00	X	2.50	= 25.00
Treatment Room -2	—	X	—	= —	3.50	X	3.00	= 10.50	—	X	—	= —
Dispensary	—	X	—	= —	3.00	X	2.25	= 6.75	—	X	—	= —
Injection Room	—	X	—	= —	3.00	X	3.20	= 9.60	—	X	—	= —
Toilet and Shower	—	X	—	= —	1.50	X	3.50	= 5.25	—	X	—	= —
Toilet and Shower	—	X	—	= —	1.50	X	3.50	= 5.25	—	X	—	= —
Laboratory	—	X	—	= —	1.40	X	3.00	= 4.20	—	X	—	= —
Toilet for Staffs	—	X	—	= —	1.50	X	1.50	= 2.25	—	X	—	= —
Redeption and Registration	—	X	—	= —	4.50	X	3.50	= 15.75	—	X	—	= —
Family Planning Room/ Environmental Health	—	X	—	= —	—	X	—	= —	3.00	X	4.00	= 12.00
Waiting for Referral (Men)	—	X	—	= —	—	X	—	= —	2.50	X	4.00	= 10.00
Storage	—	X	—	= —	—	X	—	= —	2.50	X	2.70	= 6.75
VCT Consultation Room	—	X	—	= —	—	X	—	= —	2.40	X	2.70	= 6.48
VCT Waiting Room	—	X	—	= —	—	X	—	= —	2.40	X	4.00	= 9.60
Aisle -2	—	X	—	= —	—	X	—	= —	4.90	X	1.30	= 6.37
				161.42				181.68				197.70

Maternity	1970-80				1980				2006			
	Mwazisi HC 1978				Mbera HC 1993				This Project 2006			
Room Name	W		H	Area (m ²)	W		H	Area (m ²)	W		H	Area (m ²)
Bed for After Delivery (6 beds)(4 beds)	6.00	X	6.50	= 39.00	12.25	X	4.50	= 55.13	5.70	X	5.90	= 31.21
Beds for before delivery 4 beds	—	X	—	= —	—	X	—	= —	4.30	X	5.90	= 25.37
Labour and Delivery Room	5.70	X	5.00	= 28.50	5.25	X	4.50	= 23.63	4.00	X	5.90	= 23.60
Office and Registration	2.50	X	3.20	= 8.00	—	X	—	= —	2.20	X	2.90	= 6.38
Examination Room -1	2.50	X	3.20	= 8.00	2.50	X	3.50	= 8.75	2.40	X	2.90	= 6.96
Examination Room-2	2.50	X	3.20	= 8.00	2.50	X	2.00	= 5.00	—	X	—	= —
Storage for Drugs	1.50	X	3.00	= 4.50	—	X	—	= —	2.20	X	2.90	= 6.38
Toilet	1.20		1.70	= 2.04	1.15	X	3.00	= 3.45	—	X	—	= —
Toilet and Shower	1.50	X	2.00	= 3.00	2.35	X	3.00	= 7.05	1.10	X	2.20	= 2.42
Sluce	1.20	X	1.70	= 2.04	1.75	X	3.00	= 5.25	—	X	—	= —
Shower (Toilet)	1.50	X	6.50	= 9.75	2.35	X	3.00	= 7.05	1.10	X	2.20	= 2.42
Waiting Area	7.50	X	4.70	= 35.25	8.75	X	4.50	= 39.38	5.10	X	4.60	= 23.46
Aisle -1	7.50	X	1.50	= 11.25	1.50	X	7.00	= 10.50	1.70	X	18.90	= 32.13
aisle -2	4.80	X	1.50	= 7.20	1.60	X	1.50	= 2.40	1.40	X	3.50	= 4.90
Rinen Storage	—	X	—	= —	2.10	X	1.75	= 3.68	—	X	—	= —
Toilet for Patients	—	X	—	= —	1.50	X	2.00	= 3.00	—	X	—	= —
ANC Registration	—	X	—	= —	2.50	X	2.00	= 5.00	—	X	—	= —
Midwife Room	—	X	—	= —	4.50	X	2.60	= 11.70	2.20	X	2.90	= 6.38
Waiting Room for Referral	—	X	—	= —	2.50	X	3.00	= 7.50	2.40	X	2.90	= 6.96
Storage	—	X	—	= —	—	X	—	= —	1.40	X	2.00	= 2.80
VCT Consultation Room	—	X	—	= —	—	X	—	= —	2.40	X	2.90	= 6.96
VCT Waiting Room	—	X	—	= —	—	X	—	= —	2.40	X	4.40	= 10.56
				166.53				198.45				198.89

2) Medical setups and medical services of Health Centres

The medical setup of health centres, as may be gathered from the findings of the health centre survey as shown in Table 2-2, is basically as follows. Based around permanent staff consisting of one clinical officer or medical assistant and one enrolled nurse or enrolled midwife, support staff consist of between 4~10 health surveillance assistants and health education staff as well as cleaners and guardsmen.

Table 2-21 Health Centre Medical Setup

Qualification	Number (Person)
Clinical Officer or Medical Assistant	1
Enrolled Nurse or Enrolled Midwife	1
Health Surveillance Assistant/Health Education Staff	4~10
Cleaning staff	2~4
Security	2~4

In addition to the above personnel, as activities designed to support the practice of EHP, part-time staff dispatched from district hospitals carry out regular travelling clinics at the health centres. In these travelling clinics, staffs carry out VCT activities, family planning guidance (maternal and child health care), immunizations (public sanitation), and treatment of eye, ear and skin infections.

If the scale of facilities is made larger than the standard design scale, it will be essential to increase staff, however, since the service populations of health centres are also increasing and it is planned to build an additional 27 health centres throughout the country, it is deemed that operation using the existing staff numbers will be appropriate. Accordingly, the latest standard design shall be referred to when determining the scale of facilities.

3) Examination of necessary rooms in Health Centres

① Dispensaries

The examination and treatment services conducted by medical assistants in outpatient dispensaries consist of diagnoses in the examination room, minor surgery (cutting of purulent wounds, treatment of wounds, etc.) in the treatment room, and sutures, bandaging and removal of stitches in the dressing room. Outpatient dispensaries are basically composed of these three rooms. It is essential to provide medical supply stores because the administration of medical supplies accounts for the majority of treatment and it is necessary to store the medical supplies that are regularly supplied from central dispensaries. Since health centres are unable to deal with procedures that exceed the bounds of paediatric or ailments that require hospitalisation, it is necessary to refer such patients to district hospitals. Accordingly, separate referral waiting rooms for men and women shall be provided. Outpatients shall be registered in an office-cum-reception. This composition of rooms is the same as that given in the outpatient Dispensary standard drawings (Mwazin, Mbela) that were designed by the then Ministry of Public Works and approved

by the Chief Architect in 1981.

In addition, rooms for EHP support services such as travelling clinics and immunization by specialist doctors regularly dispatched from district hospitals will be required. For this purpose, a VCT waiting room and VCT consultation room shall be installed with the object of preventing the spread of HIV/AIDS, which is prevalent and has a major impact on economic development in many countries south of the Sub-Sahara. As a room for supporting EHP activities, a family planning room shall be provided to conduct family planning guidance and distribute contraceptives and birth control devices as part of the effort to prevent the spread of HIV/AIDS.

② Maternity

The basic medical service of Maternity wards is to provide assistance for ordinary births with the help of enrolled nurses or midwives. The composition of rooms for this purpose is the same as that given in the Maternity standard drawings (Mwazisi, Mbela) that were designed by the then Ministry of Public Works and approved by the Chief Architect in 1981 (except for the enrolled nurse/midwife room). In this design, rooms basically consist of a labour and delivery room, a post-natal ward for post-birth observation, an enrolled midwife/nurse room for waiting before delivery and a medical supplies store. However, in rural areas, since it is general for Maternity and homes of pregnant women to be located far apart, the only means of transport to the health centre are ox wagon, walking or bicycle. Accordingly, in cases where pregnant women go into labour at home, since it is difficult for them to get to health centres, home deliveries with the help of TBA are common. Since the Ministry of Health is promoting deliveries in health facilities, in order to enable deliveries to be made with the assistance of qualified enrolled nurses or midwives, it is necessary to install an antenatal ward that allows pregnant women to come to hospital close to the expected date and give birth there. The examination room is for conducting antenatal examinations, determining abnormal deliveries and complications and confirming nutritional status. In cases where abnormalities are found, cases will be referred to district hospitals. In cases where difficult births or risky births caused by complications are recognized, it will be necessary to install a referral waiting room to wait for ambulances to arrive. The midwife room will be used as a waiting room before delivery and as an office and rest area.

As for other examination and treatment services, a VCT waiting room and VCT consultation room shall be installed for the same reasons stated under the Dispensary.

Based on the above examination, discussions were held with the Ministry of Health and the following rooms were planned based on the agreed contents.

Table2- 22 Necessary Rooms in Dispensary and Maternity

■ Dispensary

Department & Room Names	
1. Dispensary	
①	Examination Room
②	Treatment Room
③	Dressing room
④	Drug Store
⑤	Referral Waiting Room (F),(M)
⑥	Office & Reception
⑦	Waiting Area
2. EHP Supporting Rooms	
①	Family Planning Room
②	V C T Consultation Room
③	V C T Waiting Room
3. Public Space	
①	Corridor
②	Storage

■ Maternity

Department & Room Names	
1. Maternity	
①	Labor & delivery (Shower)
②	Post Natal Ward (Shower)
③	Examination room
④	Referral Waiting (F)
⑤	Drug Store
⑥	Nurse/Midwife Room
⑦	Office & Reception
⑧	Waiting Area
2. EHP Supporting Rooms	
①	Ante Natal Ward (Shower)
②	V C T Consultation Room
③	V C T Waiting Room
3. Public Space	
①	Corridor
②	Storage

< Dispensary >

① Examination rooms

Many of the patients who visit outpatient dispensaries have malaria, anaemia, trauma, diarrhoea or respiratory infections. Clinical officers and medical assistants conduct examination for such patients in the examination room.

② Treatment rooms

After examination, treatment for patients is carried out in the treatment room. Clinical officers and medical assistants are able to conduct simple sutures, appendix operations, sterilization fixes and other disposition according to the technical level of the medical staff.

③ Dressing rooms

Treatment for trauma and broken bone patients is carried out in this room. Since plaster for making casts is handled in this room, it needs to be partitioned from other rooms.

④ Drug Store

Since central dispensaries sometimes issue large batches of medical supplies, it is necessary to have a store that is larger than the conventional medical supplies store.

⑤ Waiting halls

Waiting rooms are spaces provided with seats for patients and attendants while they wait for examination and treatment. When treatment is not taking place, the halls can

be utilised as village assembly halls and youth assembly halls, etc. Notice boards can also be installed to provide information on travelling clinics and other public information.

⑥ Office and Reception

The HSA room is for use by health surveillance assistants, who assist the clinical officers and medical assistants and make patrols of each village in order to provide guidance on family planning, immunization (including outreach activities), paediatric care and tuberculosis, etc.

⑦ Referral waiting rooms (separate for men and women)

While patients wait for ambulances to take them to district hospitals, these rooms are used to observe their status. Separate rooms for men and women are planned in order to secure privacy.

<Dispensary EHP Supporting Facilities>

① Family planning rooms

The family planning room is used to conduct family planning guidance and distribute contraceptives and birth control devices as for EHP supporting facility. This work can be handled by clinical officers, enrolled nurses, health surveillance assistants and health education staff, however, it may also be conducted in travelling services from district hospitals.

② VCT waiting rooms, VCT consultation rooms

Although prejudice against HIV inspections has decreased, it still remains a problem. In order to encourage more people to utilise VCT, a separate entrance from general outpatients shall be provided to ensure privacy and make it easier for patients to receive counselling.

<Public Spaces>

① Public Corridor

Public corridor for passage shall be provided.

② Storerooms

The storeroom can be effectively used in order to store patient records, medical equipment in need of repair and plaster for making casts and so on.

<Maternity >

① Labour and delivery room

Health centre Maternity conduct ordinary deliveries, and the hospitalisation period after a normal delivery is usually no more than 24 hours. Judging from treatment records of the target

health centres, assuming one month to be 30 days, health centres deal with between an average of 0.5 and 1.0 deliveries per day. RHC-3 Katowo Rural Hospital and MHC-9 Euthini Rural Hospital, acting as secondary medical care agencies, also conduct abnormal deliveries referred from other Health centres. Accordingly, they handle on average 1.5 and 1.7 deliveries per day, respectively (more than Health centres). In the case where ordinary deliveries can be handled on the health centre level, the number of deliveries will be 1.0 per day judging from the service populations and record of other health centres.

In the case of ordinary deliveries, since a delivery table can handle two deliveries per day, one table shall be installed.

One labour bed shall be installed, and this shall be the type that can be used as a delivery table in case more than one delivery takes place at once.

② Post-natal beds (4 beds)

This ward is for post-natal mothers. Since women expected to have high-risk deliveries are referred to district hospitals, the health centres mainly deal with routine deliveries. However, since there are some pregnant women who do not receive ante-natal examinations and women who require special care after giving birth, post-natal beds shall be provided. Since the delivery rooms will be installed with lights and facilities greatly improved, it is forecast that more home births will switch to maternity ward births, so four beds were planned.

③ Shower booths

Shower booths shall be separately installed for the post-natal ward, ante-natal ward and labour and delivery room. Because the health centres have no running water, buckets shall be provided for showering. It shall also be possible to use portable toilets in the shower booths.

④ Waiting areas

This area shall be provided with seats so that family and friends can wait while pregnant women are giving birth. When treatment is not taking place, the halls can be utilised as village assembly halls and youth assembly halls, etc. Notice boards can also be installed to provide information on travelling clinics and other public information.

⑤ Office and reception

The HSA room is for use by health surveillance assistants, who assist the clinical officers and medical assistants and make patrols of each village in order to provide guidance on family planning, immunization (including outreach activities), paediatric care and tuberculosis, etc.

⑥ Examination rooms

Examinations of pregnant women take place in the examination room. Since this room is used to determine if deliveries will be high risk and whether or not it is necessary to refer cases to district hospitals, it is essential for reducing the mortality rate among pregnant women.

⑦ Medical supplies stores

Since central dispensaries sometimes issue large batches of medical supplies, it is necessary to

have a store larger than the conventional medical supplies store.

⑧ Enrolled Nurse/Midwife rooms

Enrolled Nurse/Midwives can use this room as an office or a resting room before deliveries.

⑨ Referral waiting rooms

This room is for patients waiting for referrals to district hospitals. It is essential for securing the privacy of patients.

<EHP Supporting Facilities>

① Ante-natal beds (4 beds)

This ward is for ante-natal mothers. Since distances from health centres to health posts can vary from a few to 20 km, it is important to build a setup whereby expectant mothers can be hospitalised in advance and give birth in safety. For this reason, an ante-natal room is required in order to encourage women to give birth in the maternity.

② VCT waiting rooms, VCT consultation rooms

Although prejudice against HIV inspections has decreased, it still remains a problem. In order to encourage more people to utilise VCT, a separate entrance from general outpatients shall be provided to ensure privacy and make it easier for patients to receive counselling. Since the JOCV also includes AIDS control officers, collaboration with the JOCV shall be taken into account when planning rooms.

<Public Spaces>

① Storerooms

The storeroom can be effectively used in order to store patient records, medical equipment in need of repair and plaster for making casts and so on.

② Public Corridor

Public corridor shall be installed.

4) Composition and area of rooms

The following table shows the composition and areas of rooms required in the outpatient Dispensary and Maternity of health centres.

In setting the floor area of each room, staff and patient numbers were taken into overall account upon referring to the floor area standards of medical facilities in Japan (materials amended by the Architectural Institute of Japan) based on the areas given in the standard drawings.

Table 2-23 Floor Area of Dispensary and Maternity

Dispensary

Room Name	W	X	H	=	Floor Area (m ²)
Examination Room	5.00	X	4.00	=	20.00
Treatment Room	3.00	X	4.00	=	12.00
Dressing Room	3.00	X	4.00	=	12.00
Drug Store	3.00	X	4.00	=	12.00
Referral Waiting Room (F)	2.50	X	4.00	=	10.00
Referral Waiting Room (M)	2.50	X	4.00	=	10.00
Waiting and Teaching Area	7.00	X	6.50	=	45.50
Office/Reception	2.50	X	4.00	=	10.00
Family Planning	3.00	X	4.00	=	12.00
VCT Consultation Room	2.40	X	2.70	=	6.48
VCT Waiting Room	2.40	X	4.00	=	9.60
Corridor 1	10.00	X	2.50	=	25.00
Corridor 2	4.90	X	1.30	=	6.37
Store	2.50	X	2.70	=	6.75
Total Floor Area					197.70

Maternity

Room Name	W	X	H	=	Floor Area (m ²)
Labour and Delivery	4.0	X	5.90	=	23.6
Ante-Natal Ward(4 beds)	4.3	X	5.90	=	25.37
Post-Natal Ward(4 beds)	5.7	X	5.90	=	33.63
Shower	1.1	X	2.20	=	2.42
Shower	1.1	X	2.20	=	2.42
Store	1.4	X	2.00	=	2.80
Waiting and Teaching Area	5.1	X	4.60	=	23.46
Reception & Office	2.2	X	2.90	=	6.38
Examination Room	2.6	X	2.90	=	7.54
Drug Store	2.1	X	2.90	=	6.09
Nurses/Midwives room	2.2	X	2.90	=	6.38
Referral Waiting Room (F)	2.3	X	2.90	=	6.67
VCT Consultation Room	2.4	X	2.90	=	6.96
VCT Waiting Room	2.4	X	4.40	=	10.56
Corridor 1	13.8	X	1.70	=	23.46
Corridor 2	1.7	X	3.90	=	6.63
Total Floor Area					194.37