

**PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR UPGRADING OF
LUSAKA HEALTH CENTRES TO
DISTRICT HOSPITALS PHASE 2
IN
THE REPUBLIC OF ZAMBIA**

January 2017

JAPAN INTERNATIONAL COOPERATION AGENCY

**THE CONSORTIUM OF
NIHON SEKKEI, INC. AND FUJITA PLANNING CO., LTD.**

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to consist of Nihon Sekkei, Inc. and Fujita Planning Co., Ltd.

The survey team held a series of discussions with the officials concerned of the Government of the Republic of Zambia, and conducted field investigations. As a result of further studies in Japan, 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.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Zambia for their close cooperation extended to the survey team.

January 2017

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Director General,
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Summary

1. Introduction

The Republic of Zambia (hereinafter referred to as, “Zambia”) is a landlocked country in Southern Africa, neighbouring eight countries: The Democratic Republic of the Congo, the United Republic of Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia and Angola. In a land area of approximately 752,610km² (twice that of Japan), approximately 15.7 million people (2014) are living, which is comprised of 73 ethnic tribes including Nyanja, Bemba and Tonga. The official language is English. Regarding the religions, approximately 80% of the population are Christian, and other religions include Islam, Hinduism and traditional religions. The major industries are mining represented by copper and cobalt and agriculture including maize, tobacco, cotton and coffee. A year is divided into the dry season of May-November and the rainy season of December-April, and most of the land is located as high as 1,000-1,350m above sea level.

Concerning the Human Development Index to assess the development of a country on three aspects (health, education, and income), Zambia is ranked the 139th (0.586, 2014) of 188 countries and classified as medium human development. The Index rose 40.1% from 1980 to 2014, and the dimensions of life expectancy at birth, mean years of schooling, and gross national income (GNI) increased by 8.6 years, 3.2 years, and 69.3% respectively.

2. Background of the Project

Concerning the situation of the health sector in Zambia, the maternal mortality rate (per 100,000 births) is 280, which is lower than the average of Eastern and Southern Africa (420 per 100,000 births) where it belongs. However, according to the main indicators of the Millennium Development Goals (MDGs), the infant mortality rate at 55.8 (per 1,000 births, 2013), the under five mortality rate at 87.4 (per 1,000 births, 2013) and the HIV prevalence rate at 12.5% (of population ages 15-49, 2013) are higher than the averages of Eastern and Southern Africa. Therefore, more efforts for improvement will be needed in a post-MDGs era.

Health is prioritized as one of the important sectors in Zambia’s Revised Sixth National Development Plan 2013-2016 (R-SNDP), which aims at “equitable access to quality health care by 2030”. In addition, it is one of the main sector reforms to renovate urban health centres (UHC) which function as the foundation of community health care mainly in rural areas.

In Lusaka District, urban health centres for basic health services exist, but level 1 hospitals that can perform surgery are in absolute shortage. There is Zambia’s University Teaching Hospital (hereinafter referred to as, “UTH”), a level 4 hospital to provide highly advanced medical care, but there are very few hospitals that are placed between UHC and UTH, which makes it difficult to meet the demands for services such as basic surgery. Therefore, UTH plays the role of a quaternary care hospital as the top referral hospital and at the same time that of the level 1 hospital in Lusaka District (a facility with departments of internal medicine, surgery, maternity and paediatrics capable of Caesarean section, basic surgery and basic examination), which makes it extremely crowded with patients all the time.

In order to cope with such situation, the Ministry of Health of Zambia (MOH) planned to designate one UHC for each of the five zones in Lusaka District in order to strengthen the facilities, improve the functions and thereby provide level 1 hospital services that are required in urban areas. As the Japan International Cooperation Agency (JICA) improved two UHCs in Matero and Chilenje in the grant aid project “the Project for Upgrading of Lusaka Health Centres to District Hospitals” which was the preceding project of this one, the Zambian Government requested to improve the remaining three UHCs as well. The three UHCs were upgraded to level 1 hospitals according to this request.

For Zambia's requirement to fulfil functioning as level 1 hospital, the table below indicates priorities and selection (final request) of what to be newly constructed, which reflects facilities necessary for upgrading, functions of supporting the medical facility as a whole, and the departments to support the health care activities that are taken over from health centre's functions. The elements are prioritized into A, B and C, in that order, based on the following standards;

- Adverse impacts on medical services caused by deterioration of the existing facilities
- Department with direct effects when upgraded to level 1 hospital
- No duplication with other donors
- Facilities requiring high construction technology

			Lv1H Functions	Chipata Lv1H		Kanyama Lv1H		Chawama Lv1H	
				Priority	Final Request	Priority	Final Request	Priority	Final Request
Level 1 Hospital Function	OPD	Consultation • Reception etc.	Reception, Account, Record	A	○	A	○	A	○
			Pharmacy		○		○		
			General Consultation (incl. Paediatrics, TB)		○		○		
			Dental		○		○		
			Eye/ENT		○		○		
	Office	Casualty	C	-	C	-	B	-	
		Office	B	-	B	-	B	-	
		Conference RM.	C	-	C	-	C	-	
		Library	C	-	C	-	C	-	
	Diagnosis etc.	Laboratory	B	-	B	○	C	-	
		Medical Imaging RM. (X-ray, Ultrasound)	A	○	A	○	A	○	
		Physiotherapy	C	-	B	-	B	○	
	Level 1 Operation	Labour RM. (incl. ante-/post-natal)	A	○	C	- (Only post-natal ○)	C	-	
		Operation RM.	A	○	A	○	A	○	
		Central Sterilization RM.	A	○	A	○	A	○	
	Ward	Surgical Ward (F) (Post Caesarean Section)	A	○	A	○	A	○	
		Medical Ward (M/F) Incl. Surgical Ward (M)	C	-	A	○	B	-	
		Paediatrics Ward	C	-	C	-	C	-	
		Isolation Ward	-	-	C	-	-	-	
Utility related	Supply etc.	Kitchen, Laundry	C	-	C	-	C	-	
		Mortuary	C	-	C	-	C	-	
		Incinerator	C	-	C	-	C	-	
	Water & Power	Water Tank	A	○	A	○	A	○	
		Septic Tank	A	○	A	○	A	○	
Continuous use	Health Services	Generator	A	○	A	○	A	○	
		MCH	C	-	C	-	C	-	
		ART (integrated into OPD)	A	○	A	○	A	○	
		VCT	C	-	C	-	C	-	

Priority : A- Facility that is essential for the Project B- Facility that is necessary but further study in Japan is required
C- Facility that will be supplied by Zambia whenever it seems necessary
Final Request : ○- Provided by Japan - : Provided by Zambia or other donors, continuous use of existing facilities

Confirmation was done with the Zambian Government that the scope of new facilities by Japan and other donors and domestic renovation by Zambia shall be fixed for upgrading the functions as level 1 hospital, based on the priorities evaluated thereof and the layout plan feasible and effective for the project budget and site area.

Regarding equipment, because there was no list of requested equipment, it was decided during the local survey to select in accordance with the Equipment Planning and Monitoring Tool Procedure Manual specified by the MOH. Based on this manual, discussions were held with the persons in charge of equipment at the Provincial Health Office (PHO) and MOH, the District Health Office (DHO) as well as the director and staff of each hospital to classify the priorities into A, B and C in that order based on the standards in the following chart. Considerations were made in order to prevent duplication with equipment provided by other donors.

Medical Equipment Selection Criteria

High-Priority Medical Equipment	Low-Priority Medical Equipment
1. Equipment required for basic medical treatment at project facilities	1. Equipment with high maintenance costs
2. Equipment required to increase due to lack of volume of equipment	2. Equipment with limited benefits/poor cost-effectiveness
3. Equipment that can be operated and maintained certainly on site	3. Equipment for academic research
4. Equipment with high expected benefits/cost-effectiveness	4. Equipment for which simpler alternative equipment exists
5. Equipment that establishes medical application	5. Equipment for which waste products and the like pose the risk of pollution
6. Equipment that enables project facilities to operate at the technical levels of their medical professionals	6. Equipment over and above the minimum required number of units (efficiency, redundancy)
7. Equipment for which project facilities have installed (or can secure) maintenance personnel to maintain	7. Equipment for which it is difficult to obtain spare parts and consumable supplies locally
8. Equipment that corresponds to the referral system, medical needs and other facets of project facilities	8. Equipment that is difficult to operate given the current technical levels of project facilities
	9. Equipment for which project facilities cannot secure maintenance personnel

3. Results of the Preparatory Study and Contents of the Project

The survey team conducted local survey from February 15 to March 13, 2016, and additional survey concerning the issue of site borders raised by the residents in the vicinity and equipment brands newly designated by the MOH from June 4 to 11.

The Project for Upgrading of Lusaka Health Centres to District Hospitals Phase2 (hereinafter referred to as, “the Project”) is intended to improve the access of the residents of Lusaka District to health care services by establishing the functions as level 1 hospital at the project facilities and contribute to improvement of social infrastructure to support sustainable economic growth in the area. Therefore, the Project is considered highly necessary and relevant.

It has been planned so that the entire site can be used and departments in shortage or in need of improvement can be newly constructed by studying the data of the number of patients, the services and the number of referrals of each hospital, considering population increase and environmental changes of the surrounding area and based on the standard of space sufficient for the number of patients expected in five years after the facility is completed.

As a result of such consideration, it has been decided that the Project will partly construct Chipata, Kanyama and Chawama Level 1 Hospitals (hereinafter referred to as, “Chipata Lv1H”, “Kanyama Lv1H”, and “Chawama Lv1H”) and procure medical equipment lacking and necessary to upgrade them to level 1 hospital.

Outline of the Project for Chipata Level 1 Hospital (Lv1H)

Project Outline		Detailed Description
OPD/Theatre (2 Story/1,389.62 m ²)	GFL	OPD: General Outpatient, Eye/ENT, Treatment Room, TB Medical Imaging: X-ray, Ultrasonography
	1FL	Theatre: Theatre, Sluice RM, Sterilisation Room Ward: Ward (Surgery/Caesarean section), Treatment Room, Doctor's Room
OPD/Maternity (2 Story/1,222.10 m ²)	GFL	OPD: Paediatrics, Dental, Pharmacy, Dispenser, Cashier
	1FL	Maternity: Delivery, Post-natal, Pre-natal Room, Doctor's Room
Slope (152.55 m ²)		
Mechanical Unit (Single Floor /222.80 m ²)		Generator Room, Main Switch Room, Main Distribution Board, Blower Room
Related Facilities (Single Floor /168.62 m ²)		Elevated Water Tank, Exterior Corridor, Septic Tank, Soak Pit
Total 3,155.69m ²		
Medical Equipment		OPD, Ward, Theatre, Maternity, Medical Imaging Existing Facilities (Casualty, Ward (excl. Maternity Ward), Laboratory, Maintenance)

Outline of the Project for Kanyama Level 1 Hospital (Lv1H)

Project Outline		Detailed Description
Theatre/Laboratory (2 Story /1,262.18 m ²)	GFL	Theatre: Theatre, Sluice Room, Sterilisation Room Maternity: Pre-natal Room, Doctor's Room
	1FL	OPD: Paediatrics, TB Medical Imaging: X-ray, Ultrasonography Clinical Laboratory: Laboratory, Sluice Room, Sterilisation Room, Sample Collection Room
OPD/Ward (2 Story /2,457.08 m ²)	GFL	Ward: Ward (Surgery/Caesarean section/Medical), Treatment Room, Doctor's Room
	1FL	OPD: General Outpatient, Eye/ENT, Dental, Treatment Room, Dispenser, Cashier, Slope
Mechanical Unit (Single Floor /93.00 m ²)		Generator Room, Main Switch Room, Main Distribution Board, Blower Room
Related Facilities (Single Floor /254.58 m ²)		Elevated Water Tank, Exterior Corridor, Septic Tank, Soak Pit, Neutralisation Tank
Total 4,066.84m ²		
Medical Equipment		OPD, Medical Imaging, Clinical Laboratory, Theatre, Maternity Ward, Surgery Ward, Medical Ward Existing Facilities (Casualty, Paediatrics Ward, Delivery, Maintenance)

Outline of the Project for Chawama Level 1 Hospital (Lv1H)

Project Outline		Detailed Description
OPD/Theatre (2 Story /1,185.20 m ²)	GFL	Theatre: Theatre, Sluice Room, Sterilisation Room Ward: Ward (Surgery/Caesarean section), Treatment Room, Doctor's Room
	1FL	OPD: General Outpatient, Eye/ENT, Dental, Treatment Room, Dispenser, Cashier
OPD/Physiotherapy (2 Story /892.80 m ²)	GFL	OPD: TB Physiotherapy: Physiotherapy Room
	1FL	OPD: Paediatrics, Dental Medical Imaging: X-ray, Ultrasonography
Slope (184.30 m ²)		
Mechanical Unit (Single Floor /93.00 m ²)		Generator Room, Main Switch Room, Main Distribution Board, Blower Room
Related Facilities (Single Floor /325.97 m ²)		Elevated Water Tank, Exterior Corridor, Septic Tank, Soak Pit
Total 2,681.27m ²		
Medical Equipment		OPD, Theatre, Physiotherapy, Medical Imaging, Ward, Existing Facilities (Medical Ward, Maternity, Casualty, Laboratory, Maintenance)

5. Project Evaluation

Implementing this plan with Japanese Grant Aid can be judged as having validity based on the following matters:

(1) Relevance

1) Purpose and Beneficiaries of the Project

The number of level 1 hospitals in Lusaka District is not sufficient to cover its population, and the residents are forced to go to the UTH which is the top referral hospital in the country even for basic medical services, which makes it extremely crowded with patients all the time. This plan will contribute to improve the access of the residents in Lusaka District to health care services and to mitigate the density of the UTH.

Chipata Lv1H, one of the project facilities, is located in Zone 1, and the number of beneficiaries is 625,957. Kanyama Lv1H is in Zone 3 with 303,772 beneficiaries, and Chawama Lv1H located in Zone 4 has 291,145 beneficiaries. The total number of beneficiaries accounts for approximately 50% of the total population of Lusaka District.

2) Integrity of the National Development Plan and the Health Policy of Zambia

The vision of the current Revised Sixth National Development Plan is “equitable access to quality health care by 2030”, in which it is one of the main policies to renovate UHCs. Also, the National Health Strategic Plan 2011-2015 features “equitable access to cost effective, quality health services as close to the residents as possible” and prioritizes “strengthening of the referral system of health care services” and “improvement of infrastructure and equipment”.

The above are highly consistent with the priority plan, and it is highly relevant to implement this plan.

3) Consistency with the Assistance Policy of the Government of Japan

One of the priority areas (medium term goal) of Japan’s Country Assistance Policy for Republic of Zambia (revised in 2014) is “improvement of basic environment for sustainable economic growth”, which includes “improving basic environment for human resource development for the next generation” as a development issue (shorter term goal). To take measures in the health sector, a policy was announced to support improvement of maternal and child health by reinforcing primary health care and improving appropriately sustainable operation and maintenance of medical facilities and equipment. Therefore, this plan is consistent with Japan’s assistance policies.

(2) Effectiveness

The output expected from the Project is described below. For the performance indicators to assess the achievement of the goals, with the benchmark year of 2016 when the survey is conducted and the target year of 2022, three years after the scheduled completion date of 2019, indicators for quantitative and qualitative effects are suggested as follows:

1) Quantitative Effect

The quantitative output expected from the Project is as follows:

Expected Project Effect

Indicator	Facility	Unit	Standard Value		Objective Value (2022) (three years after completion of construction)
			Year of Standard Value	Value	
Number of Outpatients*1	Chipata	person/year	Average between 2013-2015	191,156	239,136
	Kanyama	person/year	Average between 2014-2015	232,553	290,924
	Chawama	person/year	Average between 2013-2015	190,506	238,323
Number of Caesarean section*2	Chipata	case/year	2015	161	580
	Kanyama	case/year	2015	0	746
	Chawama	case/year	2015	0	518
Number of surgeries (excluding caesarean section)*3	Chipata	case/year	2015	655	903
	Kanyama	case/year	2015	0	1,147
	Chawama	case/year	2015	0	795

*1 : With the survey year of 2016 as the benchmark year (also in case of statistics for more than one year), it is assumed that the population of Lusaka District will increase by 3.8% (the Central Statistical Office) and the number of outpatients by 25.1% by 2022.

*2 : Caesarean section accounts for approximately 20% of childbirths, of which about 10% should be dealt with at level 1 hospitals. The target value has been set based on the forecast that deliveries will increase by 25.1% from the average of 2011-2015, 10% of which will be treated by Caesarean section.

*3 : With the assumption that surgery cases at the UTH will increase by 25.1% from the 2011-2015 average of basic surgeries and that 50% of which should be handled at the facilities which will be improved in this plan, the number of patients accepted at each hospital is calculated in accordance with breakdown among the respective zones. However, the result in 2015 is reflected for Chipata Lv1H which has already achieved a certain performance of surgeries.

By improving the outpatient ward, the facility will be able to handle the increasing number of outpatients (also considering the expected reduction of referrals to the superior hospital) and perform basic surgery including the major function of Caesarean section. The achievement of the Project's goals will be evaluated with multiple indicators reflecting the above.

2) Qualitative Effect

- Improvement in the Quality of Health Services

As a level 1 hospital, the quality of health services will be improved by reliably providing essential health services, such as surgery and X-ray inspections.

- The Provision of the Functional and Efficient Health Services

It will be possible to provide functional and efficient medical services by improving and concentrating OPD and central examination department, which can be conducive to the improvement of the flow line of staff and patients.

- Indicators of the Work Environment and Satisfaction Survey from Patients

It is expected that the satisfaction of both health services providers and patients will be improved by enhancing the workplace and environment for providing health care services.

- Reinforcement of the Referral System in the Lusaka District

It is expected that the referral system in the Lusaka District will be strengthened and that health services will be provided closer to the people by establishing the level 1 hospital function for the three project facilities. The alleviation of congestion and functional recovery as a top referral hospital are also expected.

Therefore, it is highly relevant and effective to implement the Project by Japan's grant aid cooperation.

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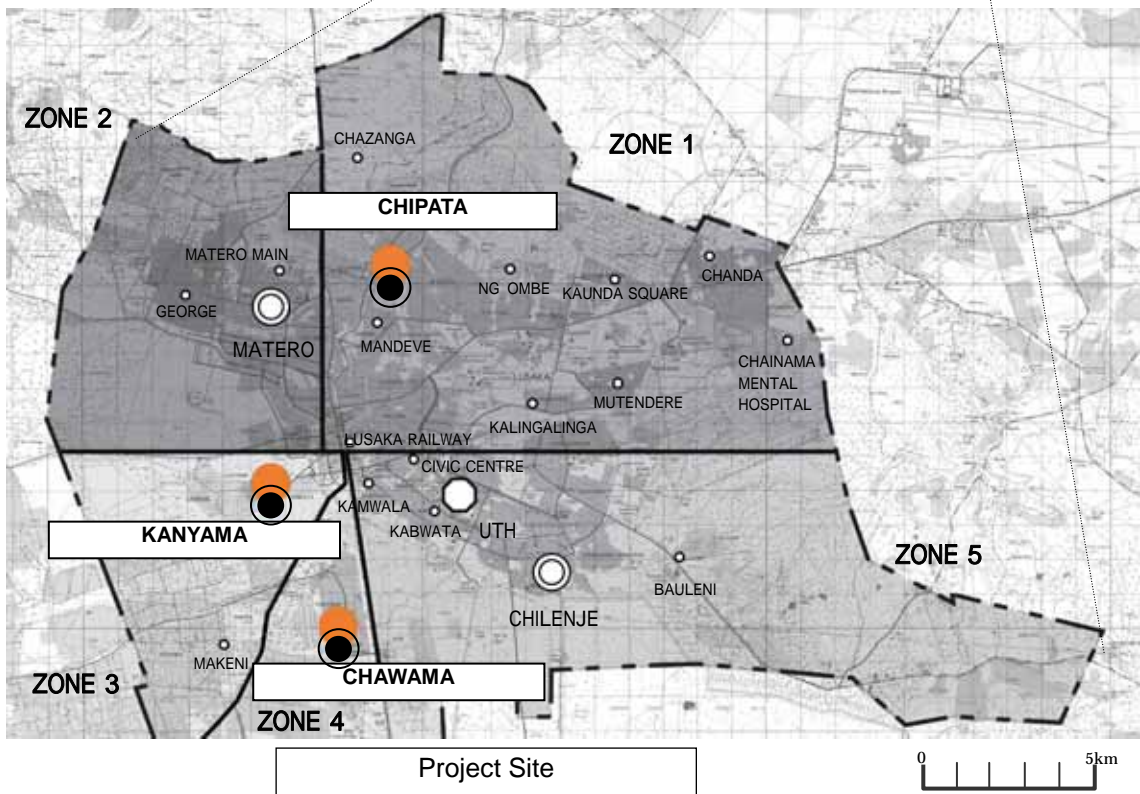
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The Republic of Zambia





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Chapter 3

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ABBREVIATIONS

A/P	Authorization to Pay
AIDS	Acquired Immunodeficiency Syndrome
B/A	Banking Arrangement
BS	British Standard
CIP	Health Sector Capital Investment Plan
CIDRZ	Centre Information Disease Research in Zambia
DHO	District Health Office
E/N	Exchange of Notes
EU	European Union
FNDP	Fifth National Development Plan 2006-2010
G/A	Grant Agreement
GDP	Gross Domestic Product
GH	General Hospital
GNI	Gross National Income
HC	Health Centre
HIPC	Heavily Indebted Poor Country
HIV	Human Immunodeficiency Virus
IMF	International Monetary Fund
JASS	Japanese Architectural Standard Specification
JICA	Japan International Cooperation Agency
JIS	Japan Industrial Standard
LDC	Least Developed Countries
Lv1H	Level 1 Hospital
MCI	Integrated Management of Childhood Illnesses
MDGi	Millennium Development Goal Initiative
MDGs	Millennium Development Goals
MMD	Movement for Multiparty Democracy
MMR	Maternity Mortality Rate
MOH	Ministry of Health
NGO	Non-Governmental Organizations
NHSP V	National Health Strategic Plan V, 2011-2015
ODA	Official Development Assistance
PF	Patriotic Party
Phase 1 Project	The grand aid project “the Project for Upgrading of Lusaka Health Centres to District Hospitals
PHAST	Participatory Hygiene and Sanitation Transformation
PHO	Provincial Health Office
R-SNDP	Revised Sixth National Development Plan 2013-2016
SABS	South African Bureau of Standards
UHC	Urban Health Centre
UN	United Nations

UNICEF	United Nations Children's Fund
UNIP	United National Independence Party
UTH	University Teaching Hospital
VAT	Value Added Tax
VCT	Voluntary Counselling and Testing
WB	World Bank
WHO	World Health Organization
ZAMTEL	Zambia Telecommunications Company Limited
ZESCO	Zambia Electricity Supply Corporation
ZMK	Zambian Kwacha
ZRA	Zambian Revenue Authority

Chapter 1. Background of the Project

CHAPTER 1. BACKGROUND OF THE PROJECT

1-1 Background of the Request and Outline of the Project

(1) Background of the Request

Concerning the situation of the health sector in The Republic of Zambia (hereinafter referred to as “Zambia”), the maternal mortality rate (per 100,000 births) is 280, which is lower than the average of Eastern and Southern Africa (420 per 100,000 births) where it belongs. However, according to the main indicators of the Millennium Development Goals (MDGs), the infant mortality rate at 55.8 (per 1,000 births, 2013), the under five mortality rate at 87.4 (per 1,000 births, 2013) and the HIV prevalence rate at 12.5% (of population ages 15-49, 2013) are higher than the averages of Eastern and Southern Africa. Therefore, more efforts for improvement will be needed in a post-MDGs era.

In Zambia’s Revised Sixth National Development Plan 2013–2016 (R-SNDP), the health sector is in a significant position, “Equitable access to quality health care for all by 2030” has been set as the objective. In addition, the rehabilitation of health centres that are the backbone of providing healthcare services especially in rural areas is a major strategy. Some health centres provide basic healthcare services in the Lusaka District, while there is a significant shortage of level 1 hospitals that offer surgery. The Lusaka District has the University Teaching Hospital (hereinafter referred to as “UTH”), which provides advanced healthcare services as level 4 hospital; however, few hospitals are positioned between UTH and the health centres. Therefore, it is difficult to respond to the demand for healthcare services, such as basic surgeries. This causes UTH to play the role as the top referral hospital in the country and the level 1 hospital in Lusaka District in which internal medicine, surgery, obstetrics and gynaecology, paediatrics, Caesarean section, basic surgery and basic examinations are available. Because of this, UTH faces chronic and severe congestion.

In 2008, to address this situation, Zambia’s Ministry of Health (MOH) proposed rezoning the Lusaka District into five satellite areas, with one health centre in each area to be served by one level 1 hospital. The specified health centres were planned to be developed to commence providing level 1 hospital services. The Japan International Cooperation Agency (JICA) has carried out the development of the Matero and Chilenje Urban Health Centres (UHC) with the grand aid project “the Project for Upgrading of Lusaka Health Centres to District Hospitals (hereinafter referred to as “the Phase 1 Project”)”. The government of Zambia has requested another grant aid project for the remaining three UHC which have been upgraded into level 1 hospitals: the Project for Upgrading of Lusaka Health Centres to District Hospitals Phase2 (hereinafter referred to as, “the Project”).

(2) Project Facilities and Request Contents

- Project sites: Chipata Level 1 Hospital (hereinafter referred to as “Chipata Lv1H”), Kanyama Level 1 Hospital (hereinafter referred to as “Kanyama Lv1H”), and Chawama Level 1 Hospital (hereinafter referred to as “Chawama Lv1H”), (in Lusaka District in Lusaka Province)

- Facilities: Facility development in line with the standards for level 1 hospitals (outpatient wing, adult ward, administration building, surgical ward, laboratory, medical imaging equipped rooms, rehabilitation facilities, kitchen, laundry, and waste system building)
- Medical equipment: equipment procurement in line with the standards for level 1 hospitals
- Consulting services / management guidance

1-2 Natural Conditions

(1) Temperature and Humidity

Lusaka City is located at 14°27' S and 28°28' E, the climate is semi-arid with rainy season and dry season.

With the average altitude of more than 1,200m, the average annual temperature is between 17°C and 24°C, comfortable with no extreme swings. The average maximum temperature is 23-31°C, but it sometimes rises close to 40°C with recent global warming. With the average lowest temperature of 10-18°C, it is considerably cool during the dry season. The relative humidity varies widely between 20% and 70% on average: 20-30% during the dry season and 60-70% during the rainy season.

(2) Rainfall

Rainfall is distinguished clearly between the dry and rainy seasons. While it exceeds 100mm/per month in the rainy season especially during the New Year holidays, it is no more than 10mm in the dry season from May to September. The annual rainfall used to be 831mm, but has increased to almost 1000mm also by the influence of global warming, and the hourly rainfall has also increased to 50-80mm. However, the percentage of dam storage has greatly decreased last year, because it rained less during the rainy season.

Table 1-1 Temperature and Rainfall in Lusaka

month	1	2	3	4	5	6	7	8	9	10	11	12	annual average
Recorded max temp.(°C) Year	33 2010	34 1992	39 1987	34 2010	33 1995	30 2006	35 2007	34 1995	41 1985	39 2012	39 1987	36 2013	-
Av. Max temp.(°C)	28	28	28	27	26	24	24	27	31	32	31	28	27.8
Av. lowest temp.(°C)	17	17	16	14	11	9	8	10	14	17	17	17	13.9
Recorded Low temp.(°C) year	9 2013	9 2009	9 2003	8 1996	6 2001	-1 1993	0 1993	3 2006	5 2006	9 2009	9 2005	9 2005	-
Rainfall (mm/month)	201	161	93	24	3	3	9	12	9	43	96	177	831 (total)

Source : Foreca (2016)

(3) Solar Radiation and Ultra Violet Rays

Located near 15° S which is relatively close to the equator, the solar altitude is high. The average amount of solar radiation is 5.12kWh/m² which is 1.3 times that in Japan. The ultra violet rays are also intense because it is high above sea level.

(4) Winds and Wind Directions

Zambia gets winds from the east almost throughout the year because of the influence of trade winds. The average wind speed is 5.4 knots, but it is 7.0-8.0 knots in from September to October. The maximum is more than 18 knots (approximately 9m/sec), which is relatively strong.

(5) Earthquake

Lusaka has never experienced any earthquake causing major damages. There is no data confirming occurrence or damages of earthquake.

(6) Ground

Ground survey was conducted at and around the three sites where construction is planned, and the result is as follows:

Chipata Lv1H: The site is adjoining with the existing hospital. The surface is composed of soft sandy soil containing gravel to 1.3m deep from embankment, and further below is hard and silty sand soil, where there are also soft layers. The estimated groundwater level is around -2.5m (1234.75m above sea level).

Kanyama Lv1H: The ground under the embankment is soft sandy soil containing gravel to around 1.0m deep, and further below exist rocks. Where there are no rocks, soft sandy layer continues more deeply. The estimated groundwater level is as shallow as -1.0m (1275.1 above sea level).

Chawama Lv1H: Construction is planned at the site of the post office partly adjoining with the existing hospital. Under the embankment is soft sandy soil containing gravel to around 2.5m deep, and further below exist rocks. Like the site of Kanyama Lv1H, there are places without rocks, where soft sandy layer continues more deeply. The estimated groundwater level is around -5.6m (1278.0m above sea level).

1-3 Environmental and Social Considerations

1-3-1 Assessment of Environmental Impact

The negative factors such as pollution would cause tremendous damages to the local residents as well as the global environment. Therefore, it is necessary to consider the factors with environmental impact and take measures before proposing the Project.

(1) Wastewater

In Lusaka City, public sewer is under construction as part of urban infrastructure, but sewer main pipes have been installed only in the central area of Lusaka. The World Bank is currently planning to improve the public sewer system in Lusaka, but it will not be completed until 2030. Sewer main pipes as well as water supply are managed by the water supply/sewer company. For environmental considerations, wastewater is treated in accordance with Zambia's standards before being discharged to rivers.

In the Project, it is necessary to treat wastewater on the premises because it is impossible to connect from the site to the public sewer. In order not to damage the environment of users and community, wastewater will be treated osmotically using infiltration tanks and pipes with sufficient depth and size in accordance with the shape and ground condition of the available space on the premises. On the other hand, it is imperative that heavy metals and organic solvents be treated by professionals. Heavy metals and organic solvents are generally stored individually and commissioned to treatment providers.

(2) Waste

General waste is being collected and treated by Lusaka city and private operators commissioned from the city. Waste is separated into general waste and hospital waste and collected by each level 1 hospital. Hospital waste is incinerated at the existing incinerator 2-3 times a week. However, separation is not strictly practiced at some centres, and it is necessary to give guidance on thorough separation, collection and prompt treatment.

(3) Exhaust

In this plan, exhaust gas from private power generators is considered to cause pollution, but it will not be a major problem, because they are operated only during power failure and trial operation.

Regarding the issues of ozone layer depletion by Freon and global warming by carbon dioxide, the related equipment in the Project are coolants of air conditioners. Models with air conditioners with minimum impact on ozone layer and global warming will be selected and procured locally.

(4) Gender Considerations

In Zambia, many hospitals have mothers' shelter to accommodate mothers who bring their children for consultation or treatment from remote places. It is sometimes called family and relatives shelter to reflect male escorts, but the facility is more frequently needed by women. However, the Project does not covered patients from remote places because it is implemented in densely populated urban areas. It has been confirmed that it is not necessary to construct a new facility.

1-3-2 Land Acquisition and Resettlement

None of the three project facilities of this plan has vacant land for constructing a new building on the site where medical activities are practiced. As it will be necessary to transfer the residents in adjoining sites and public urban functions in the process of land securing and construction, it has been requested to confirm and issue permit concerning transfer of the relevant sites and scope of application.

(1) Chipata Level 1 Hospital (Lv1H)

There is a housing district owned by the MOH in the back of the hospital site which was apparently meant for the staff. The MOH had completed transfer of residents and started demolishing the houses at the time of the survey in February 2016. As the land used in the Project is owned by the MOH, it will be officially go into effect by signature of Permanent Secretary.

In order to secure access route for construction vehicles, it will be necessary to remove the tree branches extending to roads from houses in the neighbourhood, which will however not be a problem of environmental destruction, because trees themselves will not be cut down.

(2) Kanyama Level 1 Hospital (Lv1H)

Because the hospital site is limited while there are especially many patients, it was necessary to take away the four staff houses which were surrounded by fences on the premises in order to expand the space for the hospital. While housing is needed to secure staff members under the situation of Zambia, it is imperative to develop buildings connected with each other in order to facilitate medical activities. There is also an opinion in the MOH that staff members should live apart from the hospital for hygienic reasons. Therefore, measures were taken to arrange substitute houses, and resettlement agreement signed by the resident staff members was developed.

On the other hand, the District Health Office (DHO) and those who are concerned will discuss and cooperate so that construction vehicles can pass between the facilities through the community lands.

(3) Chawama Level 1 Hospital (Lv1H)

In order to secure space for expanding the facility, the representatives prepared permit to use the playground adjoining in the back as well as the post office lot adjoining with the front road.

However, some neighbours are opposing to the use of the playground. Since it would take time to persuade them and it is unknown whether the official agreement at the time of survey for the election a few months ahead can stay effective, an alternative proposal to implement this plan in an area where only the post office site is expanded was discussed during the additional survey. Because there were also many community residents who still wanted to develop the hospital making use of the playground, around 40 representatives from the community gathered and discussed advantages of the alternative proposal implementing this plan without using the playground with consultants so that Vice Minister of the office of the Vice President can keep the technical flow consistent with the grant aid schedule. In the alternative proposal, two more old buildings will be removed than in case of partly using the playground, but it gained the understanding of the users including residents. Regarding the location of the mortuary, according to the intention of the MOH and the hospital, it has been incorporated in the alternative proposal that the Zambian side wants to transfer it to a location far from the construction area of the Project.

For the space to store construction materials and equipment, it has been decided that the front square will be offered in place of part of the playground which had been agreed during the initial survey.

Chapter 2. Contents of the Project

CHAPTER 2. CONTENTS OF THE PROJECT

2-1 Basic Concept of the Project

(1) Overall Goal and Project Purpose

In Zambia, “equitable access to quality health care for all by 2030” has been set as the vision in the Revised Sixth National Development Plan 2013–2016 (R-SNDP), and the rehabilitation of health centres is a major strategy in the plan. In addition, the National Health Strategic Plan 2011–2015 states that its mission is “to provide equitable access to cost effective, quality health services as close to the family as possible”, and “health service referral systems” and “infrastructure and equipment” are prioritised.

There is a shortage of level 1 hospitals for the size of population. The facilities of the Project have been upgraded into level 1 hospitals after the MOH established an operation theatre, however the provision of essential health services, such as X-ray inspections and basic surgery (including Caesarean sections), is insufficient due to dilapidated facilities, a lack of or dilapidated equipment and shortages in the health workforce. Therefore, people who do not require advanced health service and just need basic health service have to go UTH, which is a top referral hospital responsible for advanced health services, and it faces chronic congestion.

Under this situation, the Project aims to contribute to the sustainable development of social infrastructure to support economic growth through the improvement of access to health care services and improvement of basic health services in the Lusaka District, and its need and validity of the Project are high. The overall goal and the Project purpose are shown in Table 2-1.

Table 2-1 Overall Goal and Project Purpose

Overall Goal	Improve the health of people in Zone 1, 3 and 4 in Lusaka District where the health facilities covered by the Project, namely Chipata, Kanyama and Chawama Level 1 Hospitals (hereinafter referred to as “Lv1Hs”), are located.
Project Purpose	Improve access to health services for people in the Lusaka District and improve health services by establishing functions of level 1 hospital at the three health facilities.

(2) Outline of the Project

To achieve the overall goal and the project purpose described above, the Project aims to establish functions that are required at level 1 hospitals and to improve health services through the development of health infrastructure and the appropriate allocation of the human workforce at the three health facilities.

Also, soft component will be added to guide the management of the facilities, focusing on daily inspections, maintenance and proper operation for utilities and equipment. This is to ensure that the facilities and equipment are appropriately and effectively used for the long term and that the provision of health services will be effective.

In the Project, a cooperative target is to construct part of the facilities at Chipata, Kanyama and Chawama Lv1Hs, with the procurement of medical equipment mainly to these areas newly constructed.

Table 2-2 Outline of the Project for Chipata Lv1H

Project Outline		Detailed Description
OPD/Theatre (2 Story/1,389.62 m ²)	GFL	OPD: General Outpatient, Eye/ENT, Treatment Room, TB Medical Imaging: X-ray, Ultrasonography
	1FL	Theatre: Theatre, Sluice RM, Sterilisation Room Ward: Ward (Surgery/Caesarean section), Treatment Room, Doctor's Room
OPD/Maternity (2 Story/1,222.10 m ²)	GFL	OPD: Paediatrics, Dental, Pharmacy, Dispenser, Cashier
	1FL	Maternity: Delivery, Post-natal, Pre-natal Room, Doctor's Room
Slope (152.55 m ²)		
Mechanical Unit (Single Floor /222.80 m ²)		Generator Room, Main Switch Room, Main Distribution Board, Blower Room
Related Facilities (Single Floor /168.62 m ²)		Septic Tank, Soak Pit, Elevated Water Tank, Exterior Corridor
Total 3,155.69m ²		
Medical Equipment		OPD, Ward, Theatre, Maternity, Medical Imaging Existing Facilities (Casualty, Ward (excl. Maternity Ward), Laboratory, Maintenance)

Table 2-3 Outline of the Project for Kanyama Lv1H

Project Outline		Detailed Description
Theatre/Laboratory (2 Story /1,262.18 m ²)	GFL	Theatre: Theatre, Sluice Room, Sterilisation Room Maternity: Pre-natal Room, Doctor's Room
	1FL	OPD: Paediatrics, TB Medical Imaging: X-ray, Ultrasonography Clinical Laboratory: Laboratory, Sluice Room, Sterilisation Room, Sample Collection Room
OPD/Ward (2 Story /2,457.08 m ²)	GFL	Ward: Ward (Surgery/Caesarean section/Medical), Treatment Room, Doctor's Room
	1FL	OPD: General Outpatient, Eye/ENT, Dental, Treatment Room, Dispenser, Cashier, Slope
Mechanical Unit (Single Floor /93.00 m ²)		Generator Room, Main Switch Room, Main Distribution Board, Blower Room
Related Facilities (Single Floor /254.58 m ²)		Septic Tank, Soak Pit, Neutralisation Tank, Elevated Water Tank, Exterior Corridor
Total 4,066.84m ²		
Medical Equipment		OPD, Medical Imaging, Clinical Laboratory, Theatre, Maternity Ward, Surgery Ward, Medical Ward Existing Facilities (Casualty, Paediatrics Ward, Delivery, Maintenance)

Table 2-4 Outline of the Project for Chawama Lv1H

Project Outline		Detailed Description
OPD/Theatre (2 Story /1,185.20 m ²)	GFL	Theatre: Theatre, Sluice Room, Sterilisation Room Ward: Ward (Surgery/Caesarean section), Treatment Room, Doctor's Room
	1FL	OPD: General Outpatient, Eye/ENT, Dental, Treatment Room, Dispenser, Cashier
OPD/Physiotherapy (2 Story /892.80 m ²)	GFL	OPD: TB Physiotherapy: Physiotherapy Room
	1FL	OPD: Paediatrics, Dental Medical Imaging: X-ray, Ultrasonography
Slope (184.30 m ²)		
Mechanical Unit (Single Floor /93.00 m ²)		Generator Room, Main Switch Room, Main Distribution Board, Blower Room
Related Facilities (Single Floor /325.97 m ²)		Septic Tank, Soak Pit, Elevated Water Tank, Exterior Corridor,
Total 2,681.27m ²		
Medical Equipment		OPD, Theatre, Physiotherapy, Medical Imaging, Ward, Existing Facilities (Medical Ward, Maternity, Casualty, Laboratory, Maintenance)

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

(1) Basic Principles

1) Function Reinforcement toward Level 1 Hospital

The plan is for upgrading the three existing health centres to level 1 hospitals to strengthen the referral system in Lusaka District.

The plan aims at strengthening the functions of the surgery department, which was newly created by the Zambian Government recently, from the viewpoint of preventing in-hospital infections and at improving the efficiency of medical activities by enhancing coordination between the maternity and the operation departments because most of operations performed at level 1 hospitals are Caesarean section and trauma surgery.

2) Coexistence of Services Continued by Urban Health Centres and Ones Provided by Level 1 Hospitals

Each level 1 hospital need to provide patients for services as UHC even if each level 1 hospital is upgraded from UHC. Therefore, the facilities are planned to provide services such as maternal and child health care, ART and VCT which used to be provided by UHC to patients who are increasing with the regional population growth by making use of the existing facilities. Room-layout is considered, as the outpatient department can gradually adapt to consolidation with ART further after the project completion, because ART tends to be integrated with general outpatient department

3) Facility Master Plan

As the facilities are close to the city centre, site areas are limited. The holistic zoning plan is clearly proposed according to the hospital functions (facility master plan) including renovating of the existing facilities which will be continuously used after the Project completion.

4) Size of Project Facilities

Each size of the project facilities is planned based on the numbers of past patients available and expected numbers of patients in 2024 (five years after completion of the Project in 2019), projected with the population growth rate in Zambia. In addition, UTH, Levy Mwanawasa General Hospital, and each local hospital, also projected with the population growth rate in Zambia for 2024 were referred to.

5) Stories of Buildings

Considering limited area and possibility of future extension, the facilities will be two-story instead of previous flat ones. Higher building than two stories has been abandoned because of the insufficient capacity of urban infrastructure and adverse impacts on medical services. Elevators will not be installed, because recent power failure occurs frequently and it would also require maintenance costs on a continuous basis. Instead, stretchers, carts and, wheelchairs will be moved on slopes.

6) Prevention of In-Hospital Infections

To prevent in-hospital infections, traffic routes of patients and route for medical preparation of staff are laid out separately.

7) Gender Considerations

In order to avoid uncomfortableness between genders in the daily flow lines of patients and staff in the hospitals, toilet entrances for men and women are located as far as possible in proper area and invisible from main corridors with partitions. Universal toilets for wheelchairs are separated between men and women if possible. In operation department, locker rooms for male and female staff are separated and the visibility from the flow lines of each other is minimized. Maternity and surgical wards, where many patients of Caesarean section are, is located separate from outpatient area.

8) Environmental Considerations

The Project incorporates measures to prevent possible contamination in the facilities and their surroundings, such as installation of septic tank and neutralisation tank for water treatment, reuse of construction support materials.

9) Technical and Financial Self-Sustainability

Planning of the facilities and medical equipment is limited to the degree to which both their technical and financial self-sustainability can be ensured, based on the current operational capacity (e.g., number of medical staff, technical level, financial capacity, and availability of consumable supplies and replacement parts). Construction materials and utilities are selected based on the criteria that they should be as robust as possible, close to maintenance free, available in the region, and easy to repair and/or replace.

10) Construction Plan That Allows Continuous Medical Services

The Project should allow the existing medical facilities to provide their current functions during contraction term as usual. For this reason, a construction plan will be developed paying attention to how to carry in the construction materials and other necessary factors, not to get in the way of the current services provided in the project facilities.

11) Soft Component

In order to establish sustainable maintenance system for facilities and equipment, technical training will be provided at the project facilities, through soft component service.

12) Status of Activities of Other Donors

The status of activities of other donors was ascertained to avoid duplication of aid among projects implemented by these organizations.

(2) Principles in Regard to Natural Conditions

1) Temperature and Humidity

The monthly average maximum temperature in Lusaka is 23°C-31°C. The maximum temperature sometimes exceeds 31°C, while the humidity is low. In principle, adequate ventilation will be provided by ensuring natural proper airflow without air conditioning system. However, considering that recent global warming makes the temperature rise close to 40°C sometimes, air conditioners shall be installed in closed rooms where natural ventilation cannot be provided, such as rooms with influence on the spread of infection, delivery rooms where a high level of cleanliness is required and rooms containing expensive equipment such as X-ray machines.

2) Rainfall

Annual rainfall in Lusaka is less than in Tokyo, but flooding occurs over a wide area of Lusaka every year in December, January and February. The level of ground floor of the new facilities in Kanyama and Chawama, where there is little difference in ground level, is set 60 cm higher than the ground surface. In addition, due to the effects of climate change in recent years, the annual rainfall has increased to almost 1,000mm, peak rainfall to 80mm/hour. In order to avoid maintenance risk of clogged piping after torrential rain, drainage flow shall run through open air through ditches' network through the project sites.

3) Solar Radiation and Ultraviolet Rays

Sunshine duration of the dry season is approximately 9 hours a day in Lusaka. Sunlight is very strong because of high altitude and high solar elevation near to the equator. Methods of blocking sunlight such as eaves and louvers are necessary. In addition, materials should be durable against ultraviolet deterioration, where they are exposed to direct sunlight such as roofs, outer walls, exterior pipes.

(3) Principles for Social Economic Conditions

From 2000 to 2005 Zambia recorded an inflation rate around 20% every year, but from 2006 to 2010 inflation became milder. According to the data of the International Monetary Fund (IMF),

the inflation rate gradually increased by 6.978% (in 2013), 7.811% (in 2014), and 10.107% (in 2015), and is expected to keep increasing by 12.500% (in 2016), 9.901% (in 2017), and 7.651% (in 2018). Regarding accumulation, based on the IMF data, we will set an expected price fluctuation from the point after a month from accumulation start point (April 2016) to the anticipated bid point (November 2017) to reflect it in the accumulated unit price. Regarding estimation of project cost, unit prices are quoted in March 2016 and adjusted for expecting prices at anticipated tender in November 2017, using inflation rate based on the IMF data.

(4) Principles for Construction / Procurement Circumstances and Industry / Commercial Practice

There are a number of buildings under construction in the capital city, Lusaka, and the situation surrounding the construction industry seems relatively good. The price of construction materials in Zambia is greatly affected by the Republic of South Africa, the main import-trading partner. Along with the impacts of international price trends where the price of raw materials including oil and iron ore is on the rise, the overall price in Zambia is expected to keep rising in the future.

In the City of Lusaka, there are many construction material shops run by foreigners from the Republic of South Africa, India, and other countries, and imported goods from outside the country can routinely be found everywhere in the markets. Considering costs and maintenance readiness after completion of construction, Materials available in the region shall be basically used to procure general construction elements in the Project.

(5) Principles about Utilisation of Local Staff (Construction Company, Consultant)

In the City of Lusaka, medium to large size construction work is conducted under the leadership of foreign capital construction companies. Most of the experienced engineers are from countries other than Japan and the recipient country, and local workers are currently engaged in unskilled labour. Under such situation, the Project will take typical construction methods in this region in order to make the most of the experiences of the skilled local workers, secure opportunities to employ local workers, enhance their skills and, save construction costs.

(6) Principles toward Operation and Maintenance Ability

1) Facility Planning

At present, Environmental Health Officers are in charge of maintenance at all the level 1 hospital facilities under supervision of the superintendent or matron. They are responsible for maintenance of water supply and sewage, waste disposal, and teaching public hygiene to the whole assigned region by visiting communities sometimes. Once the facilities are upgraded and highly equipped, the current hygiene maintenance knowledge will not be enough to maintain the expected larger utility systems and it will be necessary to reinforce and/or newly hire highly skilled staff to be assigned to each hospital, who can handle the maintenance work for the electricity, machinery, and medical equipment.

The most important thing is that the maintenance work is easy to conduct and that running costs can be reduced. Utilities of an appropriate quality shall be selected and procured so that the utilities can also be maintained with local supplies.

2) Medical Equipment Planning

The DHO makes the rounds to each facility to perform medical equipment maintenance. However, in addition to medical equipment for UHC, medical equipment required for medical services in level 1 hospital will be procured for the upgraded project facilities. Thus, a person responsible for medical equipment maintenance must be deployed at each hospital. The medical equipment plan calls for medical equipment selection that takes the fullest advantage of the number of medical professionals and their technical levels at each facility; facilitates the procurement of replacement parts, reagents and consumable supplies; and that corresponds in terms of both selection and maintenance to the operating capacities of new hospitals for which the counterpart is expected to be able to allocate budgets sustainably. Note that engineers from entities that deliver medical equipment will lead training on the operation of instruments, and soft component will give guidance on medical equipment maintenance. Regarding complicated equipment with mechanical system such as X-ray equipment, Ultrasonic diagnostic device, Anaesthetic machine, etc., additional one-year maintenance contract shall be secured by the Project after one-year warranty period. Then, Zambia will renew the maintenance contracts with the manufacturers or their local agents.

(7) Principles toward Planning of Facilities and Medical Equipment

1) Facility Planning

The design of hospital buildings shall be in accordance with the following standards used in Zambia and the standards of Zambia. To make the facility planning incorporate appropriate considerations for the environment, prevention of in-hospital infection, attention to people with physical disabilities, and measures at the time of disaster, it shall be in accordance with the building standards of Japan.

- British Standards
- South African Bureau of Standards

Using examples from similar medical facilities in Zambia regarding department structures and function levels, appropriate grades are set according to the required performance for each department and room so that cost-effectiveness of the facilities will be optimised.

For security reasons, rooms which stores costly medical equipment and/or medicine shall be secured and have protected windows with iron bars.

2) Medical Equipment Planning

Medical equipment procured under the Project will satisfy essentially the same performance and specification as the Phase 1 Project, and medical equipment for which replacement parts and consumable supplies can be procured locally will be chosen to avoid

creating excessive burdens for maintenance. Because voltage fluctuates is severe in Lusaka District, precision medical equipment that could be damaged by power outages or voltage fluctuation must be fitted with automatic voltage regulators (AVR) or uninterruptable power supply equipment (UPS). In addition, local water is hard; thus, high-pressure steam sterilizers, bedpan washers, dental units and water vapour distillation systems must be fitted with water softeners.

(8) Principles for Construction / Procurement Methods and Construction Schedule

1) Construction Method

In Lusaka, with few exceptions of modern buildings, the most typical construction method is to pile concrete blocks and bricks without establishing a structure frame. However, it is absolutely necessary in the Project to build a structure frame in order to support vast spaces like patients' waiting room. In addition to such conditions, in order to reduce costs of transporting materials and to make use of the local skills, the rigid frame structure of reinforced concrete using local materials will be applied for foundations, slabs, columns and beams. The walls will consist of piled bricks or concrete blocks in the structure frame as in the locally typical method.

2) Procurement Method

For the construction materials, we will use local procurement wherever possible to facilitate maintenance after completion of construction. For the medical equipment, we will procure it in Japan or Zambia in principle, because most of the medical equipment has only basic functions and is easy to maintain. We will consider, however, procuring from a third country some of the medical equipment to be used in the radiation, ultrasound and theatre rooms, because maintenance contract will be entered with such medical equipment which requires the help of an agency of the manufacturer in Zambia for maintenance services. We also want to avoid a situation where competition in bid tendering does not work and fair bidding is not possible because the procurement options are limited to Japanese products. Regarding the equipment that can be procured locally in Zambia, any measures towards the tender condition that the equipment should have CE mark will be taken in order to avoid low quality equipment.

3) Construction Schedule

A year is divided into the dry season and rainy seasons. Especially in December, January and February, the rain exceeds 200mm, but it rarely rains all day long in recent years, which should allow to proceed with preparatory works and direct temporary works in an intermittent manner. Indoor works such as interior finishing and medical equipment installation can be progressed without being affected by weather.

Construction area of all the three project sites is small and surrounded by existing buildings, heavy construction machinery should be carefully laid out in a phased manner.

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

2-2-2-1 Overview of the Project (Review of Requests)

(1) Analysis of Request and Selection of the Items

1) Facilities Plan

For Zambia's requirement to fulfil functioning as level 1 hospital, Table 2-5 indicates priorities and selection (final request) of what to be newly constructed, which reflects facilities necessary for upgrading, functions of supporting the medical facility as a whole, and the departments to support the health care activities that are taken over from health centre's functions. The elements are prioritized into A, B and C, in that order, based on the following standards;

- Adverse impacts on medical services caused by deterioration of existing facilities
- Department with direct effects when upgraded to level 1 hospital
- No duplication with other donors
- Facilities requiring high construction technology

Table 2-5 Selection of Requested Items

			Lv1H Functions	Chipata Lv1H		Kanyama Lv1H		Chawama Lv1H	
				Priority	Final Request	Priority	Final Request	Priority	Final Request
Level 1 Hospital Function	OPD	Consultation • Reception etc.	Reception, Account, Record	A	○	A	○	A	○
			Pharmacy		○		○		
			General Consultation (incl. Paediatrics, TB)		○		○		
			Dental		○		○		
			Eye/ENT		○		○		
		Casualty	C	-	C	-	B	-	
	Office	Office	B	-	B	-	B	-	
		Conference RM.	C	-	C	-	C	-	
		Library	C	-	C	-	C	-	
	Diagnosis etc.	Laboratory	B	-	B	○	C	-	
		Medical Imaging RM. (X-ray, Ultrasound)	A	○	A	○	A	○	
		Physiotherapy	C	-	B	-	B	○	
	Level 1 Operation	Labour RM. (incl. ante-/post-natal)	A	○	C	- (Only post-natal ○)	C	-	
		Operation RM.	A	○	A	○	A	○	
		Central Sterilization RM.	A	○	A	○	A	○	
Ward	Surgical Ward (F) (Post Caesarean Section)	A	○	A	○	A	○		
	Medical Ward (M/F) Incl. Surgical Ward (M)	C	-	A	○	B	-		
	Paediatrics Ward	C	-	C	-	C	-		
	Isolation Ward	-	-	C	-	-	-		
Utility related	Supply etc.	Kitchen, Laundry	C	-	C	-	C	-	
		Mortuary	C	-	C	-	C	-	
		Incinerator	C	-	C	-	C	-	
	Water & Power	Water Tank	A	○	A	○	A	○	
		Septic Tank	A	○	A	○	A	○	
Continuous use	Health Services	Generator	A	○	A	○	A	○	
		MCH	C	-	C	-	C	-	
		ART (integrated into OPD)	A	○	A	○	A	○	
		VCT	C	-	C	-	C	-	

Priority : A- Facility that is essential for the Project B- Facility that is necessary but further study in Japan is required

C- Facility that will be supplied by Zambia whenever it seems necessary

Final Request : ○-Provided by Japan - : Provided by Zambia or other donors, continuous use of existing facilities

Confirmation was done with the Zambian Government that the scope of new facilities by Japan and other donors and domestic renovation by Zambia shall be fixed for upgrading the functions as level 1 hospital, based on the priorities evaluated thereof and the layout plan feasible and effective for the project budget and site area.

2) Medical Equipment Plan

Zambia had no specific list of requested medical equipment for the Project; thus, it was confirmed during the field surveys that medical equipment will be selected according to the lists of standard medical equipment for each level of medical facility (Medical Equipment Planning and Monitoring Tool Procedure Manuals) established by the MOH. The Japan side carefully investigated and analysed this list of standard medical equipment, and discussed with people responsible for medical equipment at the MOH, DHO and Provincial Health Office (PHO) as well as the directors and staff members of each hospital. Then, the priority of each piece of medical equipment was classified as shown in the selection criteria below, with A as the highest priority level followed by B and C. The list of standard medical equipment included many types of minor medical equipment, and medical equipment deemed to be procurable by the Zambian side was assigned a priority level of C. As for diagnostic imaging equipment, on the other hand, the priority level of A was assigned to X-ray equipment, ultrasonic diagnostic device, and ultrasonic diagnostic device for obstetrics because each hospital had high numbers of births. Regarding the priority level of C, some medical equipment, which is essential to function the department covered by the Project and also is needed to be provided with other relevant medical equipment planned to be provided in the Project, was determined to be provided.

In the course of investigating the requested medical equipment, considerations were made to avoid redundancy of medical equipment provided by UNICEF including birthing tables and other medical equipment provided by UNICEF.

None of the three hospitals possessed the medical equipment required to provide level 1 hospital-level services, and thus, medical equipment required for level 1 hospital was selected. Medical equipment that includes selection criteria and priority levels for requested medical equipment is listed in the following table.

Table 2-6 Selection of Requested Medical Equipment

Medical Equipment Selection Criteria

High-Priority Medical Equipment	Low-Priority Medical Equipment
<ol style="list-style-type: none"> 1. Equipment required for basic medical treatment at project facilities 2. Equipment required to increase due to lack of volume of equipment 3. Equipment that can be operated and maintained certainly on site 4. Equipment with high expected benefits/cost-effectiveness 5. Equipment that establishes medical application 6. Equipment that enables project facilities to operate at the technical levels of their medical professionals 7. Equipment for which project facilities have installed (or can secure) maintenance personnel to maintain 8. Equipment that corresponds to the referral system, medical needs and other facets of project facilities 	<ol style="list-style-type: none"> 1. Equipment with high maintenance costs 2. Equipment with limited benefits/poor cost-effectiveness 3. Equipment for academic research 4. Equipment for which simpler alternative equipment exists 5. Equipment for which waste products and the like pose the risk of pollution 6. Equipment over and above the minimum required number of units (efficiency, redundancy) 7. Equipment for which it is difficult to obtain spare parts and consumable supplies locally 8. Equipment that is difficult to operate given the current technical levels of project facilities 9. Equipment for which project facilities cannot secure maintenance personnel

Medical Equipment Selection Result

Priority A: Medical equipment that is highly prioritized for the Project

B: Medical equipment that is highly prioritized but further analysis in Japan is required

C: Medical equipment that could be procured by Zambia as necessary

Final Request ○: Provided by Japan

-: Provided by Zambia or other donors, continuous use of existing equipment

* In terms of C, some medical equipment, which is essential to function the department covered by the Project and also is needed to be provided with other relevant equipment planned to be provided in the Project, was determined to be provided.

Chipata Lv1H

Equipment Name	Priority	Final
New Facility		
I.Outpatient Dept.		
Wheelchair	A	○
Stretcher	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-2 (Eye /ENT)		
Diagnostic set for Eye and ENT	A	○
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Bed-side screen	B	○
Consultation Room-3 (Gynaecology)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Examination couch, gynaecological	A	○
Bed-side screen	B	○
Examination light	A	○
Thermometer, digital	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, binaural	A	○
BP machine, adult	A	○
Vaginal speculum small	A	○
Vaginal speculum medium	A	○
Vaginal speculum large	A	○
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
X-ray film viewer (Wall mounted type)	A	○
Consultation Room-4		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Suction pump, foot-operated	C	-
Consultation Room-5		
Examination desk set	B	○
Equipment cabinet	B	○
Waste bin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○

Equipment Name	Priority	Final
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-6		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-7 (Vital)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Weighing scale, adult	A	○
Chart, vision-testing, Snellen type	A	○
Patella hammer	A	○
Suction pump, electric	A	○
Ambu Bag for adults	A	○
Ambu Bag for children	A	○
Dressing trolley	A	○
Pulse oximeter, finger type	A	○
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Treatment Room		
Autoclave, electric, small	C	-
Autoclave, non-electric, small (39 litres)	C	-
Sterilizing drum, small	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Drainage set	A	○
Dressing set	A	○
Suturing set	A	○

Equipment Name	Priority	Final
Instrument tray, medium	A	○
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
Drip stand	A	○
Treatment table	A	○
Ultrasonography Room		
Ultrasonic diagnostic device	A	○
Treatment table	A	○
X-ray Room		
Actinic marker	A	○
Film processor, automatic	A	○
Darkroom safety light holder	C	-
Dryer for manual film processor	C	-
Electrolyte Silver Recovery Kit	C	-
Film hanger (set of five sizes)	C	-
HSG kit	C	-
Lead gloves	C	-
Film processor, manual	C	-
Protective lead shield or screen	C	-
Quality assurance kit	C	-
Lead apron	A	○
X-ray film stationery grid	B	-
X-ray film viewing box (Stand type)	A	○
X-ray loading bench (Film hopper)	A	○
X-ray equipment	A	○
Consultation Room-1 (IB)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Thermometer, mercury type	C	-
Thermometer jar	C	-
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-1 (Paediatrics)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Weighing trousers	A	○
Salter scale	A	○
Stethoscope, binaural	A	○

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
BP machine, child	A	○
Ear syringe	A	○
X-ray film viewer (Wall mounted type)	A	○
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-2 (Dentistry)		
Bench top autoclave	A	○
Dental amalgamator	C	-
Dental treatment unit	A	○
Dental film processor	A	○
Dental instrument cabinet	A	○
Dental instrument set	A	○
Dental Instrument tray	C	-
Dental light	C	-
Dental light curing unit	A	○
Dental treatment trolley	A	○
Dental x-ray unit	A	○
Ultrasonic dental scaler	A	○
Lead apron	A	○
Pharmacy		
20 ml medicine cup	A	○
Drug cabinet, lockable	A	○
Pharmacy apparatus set	A	○
Mixer	A	○
Mortar and pestle	A	○
Pharmacy balance	A	○
Pharmacy heavy duty trolley	A	○
Pharmacy refrigerator	A	○
Tablet and capsule counter	A	○
Tablet counting tray	A	○
Vaccine refrigerator	B	○
Water distiller	A	○
Water filter	C	-
2. Operation Dept.		
Theatre		
Ambu Bag for adults	A	○
Ambu Bag for children	A	○
Anaesthetic machine	B	○
Bowl, lotion, large	C	-
BP machine, adult	A	○
Bucket, stainless steel with cover	A	○
Electro surgical unit	A	○
Dangerous drugs, cabinet	C	-
Defibrillator	B	-
Dressing tray, large	C	-
Dressing tray, medium	C	-
Dressing tray, small	C	-
Dressing trolley	C	-
Drip stand	A	○
Ear syringe	C	-
Medical cabinet	B	○
Footstool, one-step	A	○
Instrument Cabinet	C	-
Instrument tray, large	C	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Instrument trolley	C	-
Kick-about bowl	C	-
Laryngoscope set	A	○
Equipment Cabinet	B	○
Mayo table	A	○
Neonatal resuscitaire	C	-
Operating stools, revolving	A	○
Operating table	C	-
Operating-room light, fixed, ceiling mounted	A	○
Operating-room light, portable, with stand	A	○
Oxygen concentrator	A	○
Oxygen cylinder	C	-
Stretcher	A	○
Recovery bed	A	○
Stand, single bowl	C	-
Stethoscope, fetal, Pinard	A	○
Ventilator	C	-
Vital signs monitor, portable	A	○
Wall clock	C	-
X-Ray film viewing box (Stand type)	A	○
Medicine refrigerator	A	○
Suction pump, electric	C	○
Set, amputation	A	○
Set, bilateral tubal ligation	A	○
Set, caesarean section	A	○
Set, decapitation	C	-
Set, hysterectomy	A	○
Set, dilatation and curettage Set (D+C set)	A	○
Set, general	C	-
Set, laparotomy	A	○
Set, minor surgery	A	○
Sterilization Room / Sluice Room		
Autoclave, electric, 400 litres	A	○
Bed pan washer	A	○
Sterilizing drum large	A	○
Sterilizing drum medium	A	○
Ultrasonic cleaner	C	-
3. Surgical Ward (Caesarean)		
Nurse Station		
Equipment Cabinet	C	○
Wastebin with lid	C	○
Treatment Room		
Vaginal speculum small	A	○
Vaginal speculum medium	A	○
Vaginal speculum large	A	○
Thermometer, digital	A	○
Thermometer Jar	C	-
Salter scale	C	○
Weighing trousers	A	○
BP machine, adult	A	○
Glucometer	A	○
Rapid Diagnostic Test kits for malaria	C	-
Autoclave, electric, medium	C	-
Sterilizing drum, small	C	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Sterilizing drum, medium	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Instrument tray, medium	C	-
Instrument tray, large	C	○
Dressing tray, medium	A	○
Dressing trolley	A	○
Dressing set	A	○
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
Treatment table	A	○
Ward		
Hospital bed (Adult)	A	○
Bed-side cabinet, hospital model	B	○
Drip stand	A	○
Infant cot	B	○
X-ray equipment (Mobile type)	A	○
Side Ward		
Hospital bed (Adult)	A	○
Bed-side cabinet, hospital model	B	○
4. Maternity Dept.		
Nurse Station		
Equipment Cabinet	B	○
Wastebin with lid	B	○
Treatment Room		
Examination couch, gynecological	A	○
Footstool, one-step	A	○
Bed-side screen	C	-
CT G machine	C	-
Examination light	C	○
Traube	A	○
Fetal heart detector	C	-
Vaginal speculum small	A	○
Vaginal speculum medium	A	○
Vaginal speculum large	A	○
RPR rotator	B	-
Pre-natal Room		
Hospital bed (Adult)	B	○
Hospital bed bednet, treated	C	-
Infant cot	C	-
Infant cot bednet, treated	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Phototherapy equipment	C	-
Oxygen concentrator	C	-
Delivery Room		
Instrument Cabinet	C	○
Instrument trolley	C	○
Delivery bed	C	-
Drip stand	A	○
Footstool, one-step	A	○
Bed-side screen	C	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Operating stool, revolving	A	○
Vaginal delivery/episiotomy set	A	○
Kick-about bowl	B	○
Manual vacuum aspiration (MVA) kit	A	○
Vacuum extractor, electrical	A	○
Weighing scale, infant, beam type	A	○
Wall clock	C	-
Resuscitaire	C	-
Neonatal incubator	C	-
Suction pump, electric	A	○
Suction pump, foot-operated	C	-
Fetal doppler	C	-
BP machine, adult	A	○
Transport Incubator	A	○
Ultrasonic diagnostic device (Mobile type)	A	○
Post-natal Room		
Hospital bed (Adult)	B	○
Infant cot with mattress	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Bed pan	A	○
Drip stand	C	-
Premature Infant Room		
Infant warmer	A	○
Existing Facility		
5. Casualty		
Wheelchair	A	○
Stretcher	A	○
Hospital bed (Adult)	A	○
Bednet, long lasting insecticide, treated, for hospital bed	C	-
Hospital bed cradle	A	○
Bed-side screen	C	○
Bed-side cabinet, hospital model	C	-
Over-bed table	A	○
Bed pan	A	○
Excretion care set	A	○
Sputum mug	C	-
Drip stand	A	○
Oxygen concentrator	A	○
Suction pump, electric	C	○
Ambu Bag for adults	A	○
Ambu Bag for children	A	○
Diagnostic set	A	○
X-Ray film viewing box (Stand type)	A	○
6. Ward (Except Obstetrics Ward)		
Nurse Station		
Cupboard, lockable	C	-
Desk	C	-
Chair	C	-
Equipment cabinet	C	○
Wastebin with lid	C	○
Ward		
Hospital bed (Adult)	B	○

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Hospital bed bednet, treated	C	-
Infant cot	C	-
Infant cot bednet, treated	C	-
Hospital bed back rest	C	-
Hospital bed cradle	C	-
Hospital bed elevator	C	-
Traction frame	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Bed pan	C	○
Excretion care set	C	○
Sputum mug	C	-
Thermometer, mercury type	C	-
Thermometer jar	C	-
Thermometer, digital	C	○
Weighing scale, adult	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
BP machine, child	A	○
Diagnostic set for Eye and ENT	C	-
Glucometer	A	○
Rapid Diagnostic Test kits for malaria	C	-
Autoclave, electric, small	C	-
Sterilizing drum, small	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Medicine trolley	A	○
Instrument tray, medium	C	-
Instrument tray, large	C	-
Dressing tray, medium	A	○
Dressing trolley	A	○
Dressing set	A	○
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
Drip stand	A	○
Oxygen concentrator	B	○
Oxygen cylinder	C	-
Suction pump, foot operated	C	-
Suction pump, electric	A	○
Pulse oximeter, finger type	A	○
7. Laboratory Dept.		
Anaerobic jar	B	○
Analytical balance	A	○
Autoclave for laboratory, medium	A	○
Binocular microscope	C	-
Blood bank refrigerator	A	○
Bunsen burner	C	○
CD4 counting machine	C	-
Centrifuge, small	C	-
Chemistry analyser	C	-
Differential counter	B	○
Flammable liquid cabinet	B	○

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Hot air oven	B	○
Hot plate, controlled temperature	A	○
Laboratory incubator, medium	A	○
Laboratory refrigerator/freezer	A	○
Microhaematocrit centrifuge	A	○
Micropipettes, automated	A	○
pH meter	A	○
Roller/mixer	B	○
RPR rotator	B	-
Spirit lamp	B	-
Timer	A	○
Voltex for CD4 counting	C	-
Water bath	A	○
Water distiller	A	○
8. Maintenance		
Maintenance Set	A	○
9. Mortuary		
20 litre bucket	C	-
Autopsy saw	C	-
Autopsy set	C	-
Autopsy table	C	-
Mortuary fridge/unit (4 trays)	C	-
Mortuary trolley	C	-
Organ table	C	-
Spring balance	C	-
10. Ambulance		
Ambulance	C	-

Kanyama Lv1H

Equipment Name	Priority	Final	Equipment Name	Priority	Final	Equipment Name	Priority	Final
New Facility			Consultation Room -4			Consultation Room -8 (Dentistry)		
I. Outpatient Dept.			Examination Desk set	B	○	Bench top autoclave	A	○
Wheelchair	A	○	Equipment Cabinet	B	○	Dental amalgamator	C	-
Stretcher	A	○	Wastebin with lid	B	○	Dental treatment unit	B	○
Consultation Room -1 (Vital)			Treatment table	A	○	Dental film processor	A	○
Examination Desk set	B	○	Bed-side screen	B	○	Dental instrument cabinet	A	○
Equipment Cabinet	B	○	Torch, medical, pen-sized	A	○	Dental instrument set	A	○
Wastebin with lid	B	○	Thermometer, digital	A	○	Dental Instrument tray	C	-
Treatment table	A	○	Stethoscope, binaural	A	○	Dental light	C	-
Bed-side screen	B	○	BP machine, adult	A	○	Dental light curing unit	A	○
Torch, medical, pen-sized	A	○	X-ray film viewer (Wall mounted type)	A	○	Dental treatment trolley	A	○
Thermometer, digital	A	○	Thermometer, mercury type	C	-	Dental x-ray unit	A	○
Thermometer, mercury type	C	-	Thermometer Jar	C	-	Ultrasonic dental scaler	A	○
Thermometer Jar	C	-	Stethoscope, fetal, Pinard	C	-	Lead apron	A	○
Stethoscope, binaural	A	○	Suction pump, foot-operated	C	-	Treatment Room		
BP machine, adult	A	○	Consultation Room -5			Autoclave, electric, small	C	-
X-ray film viewer (Wall mounted type)	A	○	Examination Desk set	B	○	Autoclave, non-electric, small (39 litres)	C	-
Weighing scale, adult	A	○	Equipment Cabinet	B	○	Sterilizing drum, small	C	-
Chart, vision-testing, Snellen type	A	○	Wastebin with lid	B	○	Timer, 60 min	C	-
Patella hammer	A	○	Treatment table	A	○	Indicator, TST control spot	C	-
Stethoscope, fetal, Pinard	C	-	Bed-side screen	B	○	Drainage set	A	○
Suction pump, foot-operated	C	-	Torch, medical, pen-sized	A	○	Dressing set	A	○
Suction pump, electric	A	○	Thermometer, digital	A	○	Suturing set	A	○
Resuscitation bag set	A	○	Stethoscope, binaural	A	○	Instrument tray, medium	A	○
Medicine trolley	A	○	BP machine, adult	A	○	Bowl, lotion, small	C	-
Pulse oximeter, finger type	A	○	X-ray film viewer (Wall mounted type)	A	○	Bowl, lotion, medium	C	-
Consultation Room -2			Thermometer, mercury type	C	-	Bowl, lotion, large	C	-
Examination Desk set	B	○	Thermometer Jar	C	-	Drip stand	A	○
Equipment Cabinet	B	○	Stethoscope, fetal, Pinard	C	-	Treatment table	A	○
Wastebin with lid	B	○	Suction pump, foot-operated	C	-	Pharmacy		
Treatment table	A	○	Consultation Room -6 (Gynaecology)			20 ml medicine cup	A	○
Bed-side screen	B	○	Examination Desk set	B	○	Drug cabinet, lockable	A	○
Torch, medical, pen-sized	A	○	Equipment Cabinet	B	○	Graduated glass measure	A	○
Thermometer, digital	A	○	Wastebin with lid	B	○	Mixer	A	○
Stethoscope, binaural	A	○	Examination couch, gynecological	A	○	Mortar and pestle	B	○
BP machine, adult	A	○	Bed-side screen	B	○	Pharmacy balance	A	○
X-ray film viewer (Wall mounted type)	A	○	Examination light	A	○	Pharmacy heavy duty trolley	A	○
Thermometer, mercury type	C	-	Thermometer, digital	A	○	Pharmacy refrigerator	A	○
Thermometer Jar	C	-	Stethoscope, binaural	A	○	Tablet and capsule counter	A	○
Stethoscope, fetal, Pinard	C	-	BP machine, adult	A	○	Tablet counting tray	A	○
Suction pump, foot-operated	C	-	X-ray film viewer (Wall mounted type)	A	○	Vaccine refrigerator	B	○
Consultation Room -3			Thermometer, mercury type	C	-	Water distiller	A	○
Examination Desk set	B	○	Thermometer Jar	C	-	Water filter	C	-
Equipment Cabinet	B	○	Stethoscope, fetal, Pinard	C	-	Laboratory		
Wastebin with lid	B	○	Suction pump, foot-operated	C	-	Anaerobic jar	B	○
Treatment table	A	○	Vaginal speculum, small	A	○	Analytical balance	A	○
Bed-side screen	B	○	Vaginal speculum, medium	A	○	Autoclave for laboratory, medium	A	○
Torch, medical, pen-sized	A	○	Vaginal speculum, large	A	○	Binocular microscope	A	○
Thermometer, digital	A	○	Consultation Room -7 (Eye /ENT)			Blood bank refrigerator	A	○
Stethoscope, binaural	A	○	Diagnostic set for Eye and ENT	A	○	Bunsen burner	C	○
BP machine, adult	A	○	Examination Desk set	B	○	CD4 counting machine	C	-
X-ray film viewer (Wall mounted type)	A	○	Equipment Cabinet	B	○	Centrifuge, small	A	○
Thermometer, mercury type	C	-	Wastebin with lid	B	○	Chemistry analyser	C	-
Thermometer Jar	C	-	Bed-side screen	B	○	Differential counter	A	○
Stethoscope, fetal, Pinard	C	-	Diagnostic set (otoscope and ophthalmoscope)	C	-	Flammable liquid cabinet	A	○
Suction pump, foot-operated	C	-						

Equipment Name	Priority	Final
Haematology analyser	C	-
Hot air oven	A	○
Hot plate, controlled temperature	A	○
Laboratory incubator, medium	A	○
Laboratory refrigerator/freezer	A	○
Microhaematocrit centrifuge	A	○
Micropipettes, automated	A	○
pH meter	A	○
Roller/mixer	A	○
RPR rotator	A	-
Spirit lamp	C	-
Timer	A	○
Voltex for CD4 counting	C	-
Water bath	A	○
Water distiller	A	○
Ultrasonography Room		
Ultrasonic diagnostic device	A	○
Treatment table	A	○
X-ray Room		
Actinic marker	A	○
Film processor, automatic	A	○
Darkroom safety light holder	C	-
Dryer for manual film processor	C	-
Electrolyte Silver Recovery Kit	C	-
Film hanger (set of five sizes)	C	-
HSG kit	C	-
Lead apron	A	○
Lead gloves	C	-
Film processor, manual	C	-
Protective lead shield or screen	C	-
Quality assurance kit	C	-
X-ray film stationery grid	B	-
X-Ray film viewing box (Stand type)	A	○
X-Ray loading bench (Film hopper)	A	○
X-ray equipment	A	○
Consultation Room -1 (Paediatrics)		
Examination Desk set	B	○
Equipment Cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, child	A	○
X-ray film viewer (Wall mounted type)	A	○
Salter scale	A	○
Weighing trousers	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Ear syringe	A	○
Resuscitation bag set	A	○
Consultation Room -2 (IB)		
Examination Desk set	B	○

Equipment Name	Priority	Final
Equipment Cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
2, Operation Dept.		
Theatre		
Ambu bag for adults	A	○
Ambu bag for children	A	○
Anaesthetic machine	B	○
Bowl, lotion, large	C	-
BP machine, adult	A	○
Bucket, stainless steel with cover	A	○
Electro surgical unit	A	○
Dangerous drugs, cabinet	C	-
Defibrillator	C	-
Dressing tray, large	C	-
Dressing tray, medium	C	-
Dressing tray, small	C	-
Dressing trolley	C	-
Ear syringe	C	-
Drip stand	A	○
Medical Cabinet	B	○
Footstool, one-step	A	○
Instrument Cabinet	C	-
Instrument tray, large	C	-
Instrument trolley	C	-
Kick-about bowl	C	-
Laryngoscope set	A	○
Equipment Cabinet	B	○
Mayo table	A	○
Infant warmer	A	○
Operating stools, revolving	A	○
Operating table	C	-
Operating-room light, fixed, ceiling mounted	A	○
Operating-room light, portable, with stand	A	○
Oxygen concentrator	A	○
Oxygen cylinder	C	-
Stretcher	A	○
Pulse oximeter, separate	A	○
Recovery bed	A	○
Stand, single bowl	C	-
Stethoscope, binaural	A	○
Ventilator	C	-
Wall clock	C	-
Vital signs monitor, portable	A	○
X-Ray film viewing box (Stand type)	A	○
Medicine refrigerator	A	○

Equipment Name	Priority	Final
Suction pump, electric	C	○
Set, amputation	A	○
Set, bilateral tubal ligation	A	○
Set, caesarean section	A	○
Set, decapitation	C	-
Set, hysterectomy	A	○
Set, dilatation and curettage (D+C set)	A	○
Set, general	C	-
Set, laparotomy	A	○
Set, minor surgery	A	○
Sterilization Room / Sluice Room		
Autoclave, electric, 400 litres	A	○
Bed pan washer	A	○
Sterilizing drum, large	A	○
Sterilizing drum, medium	A	○
Ultrasonic cleaner	C	-
3. Maternity Dept. (Pre-natal Room)		
Nurse Station		
Desk	B	-
Chair	B	-
Instrument Cabinet	B	○
Wastebin with lid	B	○
Desk for Consulting staff	C	-
Chair for Consulting staff	C	-
Chair for patient	C	-
Cupboard, lockable	C	-
Pre-natal Room		
Hospital bed (Adult)	A	○
Examination couch, gynaecological	C	-
Footstool, one-step	C	-
CTG machine	C	-
Examination light	C	-
Fetal heart detector	C	-
RPR rotator	C	-
Delivery Room		
Instrument Cabinet	C	-
Instrument trolley	C	-
Delivery bed	C	-
Drip stand	C	-
Footstool, one-step	C	-
Bed-side screen	C	-
Operating stool, revolving	C	-
Vaginal delivery /episiotomy set	C	-
Kick-about bowl	C	-
Manual vacuum aspiration (MVA) kit	C	-
Vacuum extractor, manual	C	-
Vacuum extractor, electrical	C	-
Weighing scale, infant, beam type	C	-
Wall clock	C	-
Resuscitation apparatus	C	-
Neonatal incubator	C	-
Suction pump, electric	C	-
Suction pump, foot-operated	C	-
Fetal doppler	C	-
BP machine, adult	C	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Recovery Room		
Hospital bed (Adult)	C	-
Infant cot with mattress	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Bed pan	C	-
Drip stand	C	-
Post-natal Room		
Hospital bed (Adult)	C	-
Bednet, long lasting insecticide treated, for hospital bed	C	-
Infant cot with mattress	C	-
Bednet, long lasting insecticide treated, for hospital cot	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Bed pan	C	-
Phototherapy machine	C	-
Oxygen concentrator	C	-
Oxygen cylinder	C	-
Premature Infant Room		
Thermometer jar	C	-
Rapid Diagnostic Test kits for malaria	C	-
Autoclave, electric, small	C	-
Sterilizing drum, small	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Instrument tray, medium	C	-
Instrument tray, large	C	-
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
4. Surgical Ward (Caesarean)		
Nurse Station		
Desk	B	-
Chair	B	-
Instrument Cabinet	B	○
Wastebin with lid	B	○
Treatment Room		
Vaginal speculum, small	A	○
Vaginal speculum, medium	A	○
Vaginal speculum, large	A	○
Thermometer, digital	A	○
Thermometer	A	○
Salter scale	C	○
Weighing trousers	C	○
BP machine, adult	A	○
Glucometer	A	○
Medicine trolley	A	○
Dressing tray, medium	C	○
Dressing trolley	C	○
Dressing set	C	○
Treatment table	A	○
Ward		
Drip stand	A	○

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Hospital bed (Adult)	A	○
Bed-side cabinet, hospital model	C	○
Infant cot	C	○
X-ray equipment (Mobile type)	A	○
Side Ward		
Hospital bed (Adult)	B	○
Bed-side cabinet, hospital model	B	○
5. Medical Ward (Female)		
Nurse station		
Desk	B	-
Chair	B	-
Equipment Cabinet	B	○
Wastebin with lid	B	○
Ward		
Hospital bed (Adult)	A	○
Hospital bed bednet, treated	C	-
Infant cot bednet, treated	C	-
Hospital bed back rest	C	-
Traction frame	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Drip stand	A	○
Side Ward		
Hospital bed (Adult)	B	○
Bed-side cabinet, hospital model	C	○
Treatment Room		
Treatment table	A	○
Thermometer, digital	A	○
Weighing scale, adult	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
Glucometer	A	○
Drip stand	A	○
Oxygen concentrator	A	○
Suction pump, electric	C	○
Pulse oximeter, finger type	A	○
Dressing trolley	A	○
6. Medical Ward (Male)		
Nurse Station		
Desk	B	-
Chair	B	-
Instrument Cabinet	B	○
Wastebin with lid	B	○
Ward		
Hospital bed (Adult)	A	○
Excretion care set	A	○
Drip stand	A	○
Side Ward		
Hospital bed (Adult)	B	○
Bed-side cabinet, hospital model	C	○
Treatment Room		
Treatment table	A	○
Thermometer, digital	A	○
Weighing scale, adult	A	○

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Stethoscope, binaural	A	○
BP machine, adult	A	○
Glucometer	A	○
Drip stand	A	○
Oxygen concentrator	A	○
Suction pump, electric	C	○
Pulse oximeter, finger type	A	○
Dressing trolley	C	○
Existing Facility		
7. Casualty		
Wheelchair	A	○
Stretcher	A	○
Hospital bed (Adult)	A	○
Hospital bed cradle	A	○
Bed-side screen	C	○
Bed-side cabinet, hospital model	C	-
Over-bed table	A	○
Excretion care set	A	○
Sputum mug	C	-
Drip stand	A	○
Oxygen concentrator	A	○
Suction pump, foot operated	C	-
Suction pump, electric	A	○
Ambu bag for adults	A	○
Ambu bag for children	A	○
Diagnostic set	A	○
X-Ray film viewing box (Stand type)	A	○
8. Ward (Paediatrics)		
Hospital bed cradle	A	○
BP machine, child	A	○
9. Delivery		
Examination couch, gynecological	A	○
Footstool, one-step	A	○
Examination light	A	○
Traube	A	○
Vaginal speculum, small	B	○
Vaginal speculum, medium	B	○
Vaginal speculum, large	B	○
RPR rotator	C	-
Ultrasonic diagnostic device (Mobile type)	A	○
10. Maintenance		
Maintenance Set	A	○
11. Mortuary		
20 litre bucket	C	-
Autopsy saw	C	-
Autopsy set	C	-
Autopsy table	C	-
Mortuary fridge/unit (4 trays)	C	-
Mortuary trolley	C	-
Organ table	C	-
Spring balance	C	-
12. Ambulance		
Ambulance	C	-

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Equipment Name	Priority	Final
New Facility		
1. Outpatient Dept.		
Wheelchair	A	○
Stretcher	A	○
Consultation Room-1 (Dentistry)		
Bench top autoclave	A	○
Dental treatment unit	B	○
Dental film processor	A	○
Dental instrument cabinet	A	○
Dental instrument set	A	○
Dental light curing unit	A	○
Dental treatment trolley	A	○
Dental x-ray unit	A	○
Ultrasonic dental scaler	A	○
Lead apron	A	○
Dental amalgamator	C	-
Dental Instrument tray	C	-
Dental light	C	-
Consultation Room-2 (Paediatrics)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Salter scale	A	○
Weighing trousers	A	○
Stethoscope, binaural	A	○
BP machine, child	A	○
Ear syringe	A	○
Ambu bag for children	A	○
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-3 (Vital)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Weighing scale, adult	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
Chart, vision-testing, Snellen type	A	○
Patella hammer	A	○
Suction pump, electric	A	○
Ambu bag for adults	A	○
Medicine trolley	A	○
Pulse oximeter, finger type	A	○

Equipment Name	Priority	Final
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-4		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-5		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-6		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-7 (Gynaecology)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○

Equipment Name	Priority	Final
Examination couch, gynecological	A	○
Bed-side screen	B	○
Examination light	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
Vaginal speculum, small	A	○
Vaginal speculum, medium	A	○
Vaginal speculum, large	A	○
X-ray film viewer (Wall mounted type)	A	○
Thermometer, mercury type	C	-
Thermometer Jar	C	-
Stethoscope, fetal, Pinard	C	-
Suction pump, foot-operated	C	-
Consultation Room-8 (Eye/ENT)		
Diagnostic set for Eye and ENT	A	○
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Bed-side screen	B	○
Treatment Room		
Drainage set	A	○
Dressing set	A	○
Suturing set	A	○
Instrument tray, medium	A	○
Drip stand	A	○
Treatment table	A	○
Autoclave, electric, small	C	-
Autoclave, non-electric, small (39 litres)	C	-
Sterilizing drum, small	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
Pharmacy		
20 ml medicine cup	A	○
Drug cabinet, lockable	A	○
Pharmacy apparatus set	A	○
Mixer	A	○
Mortar and pestle	A	○
Pharmacy balance	A	○
Pharmacy heavy duty trolley	A	○
Pharmacy refrigerator	A	○
Tablet and capsule counter	A	○
Tablet counting tray	A	○
Vaccine refrigerator	B	○
Water distiller	A	○
Water filter	C	-
Ultrasonography Room		
Ultrasonic diagnostic device	A	○
Treatment table	A	○

Equipment Name	Priority	Final
X-ray Room		
Actinic marker	A	○
Film processor, automatic	A	○
Darkroom safety light holder	C	-
Dryer for manual film processor	C	-
Electrolyte Silver Recovery Kit	C	-
Film hanger (set of five sizes)	C	-
HSG kit	C	-
Lead gloves	C	-
Film processor, manual	C	-
Protective lead shield or screen	C	-
Quality assurance kit	C	-
Lead apron	A	○
X-ray film stationery grid	B	-
X-Ray film viewing box (stand type)	A	○
X-Ray loading bench (Film hopper)	A	○
X-ray equipment	A	○
2. Operation Dept.		
Theatre		
Ambu bag for adults	A	○
Ambu bag for children	A	○
Anaesthetic machine	A	○
BP machine, adult	A	○
Bucket, stainless steel with cover	A	○
Electro surgical unit	A	○
Drip stand	C	○
Dangerous drugs, cabinet	B	○
Footstool, one-step	A	○
Laryngoscope set	C	○
Instrument Cabinet	B	○
Mayo table	A	○
Operating stools, revolving	A	○
Operating-room light, fixed, ceiling mounted	A	○
Operating-room light, portable, with stand	A	○
Oxygen concentrator	A	○
Stretcher	A	○
Pulse oximeter, separate	A	○
Recovery bed	A	○
Stethoscope, binaural	A	○
Vital signs monitor, portable	A	○
X-Ray film viewing box (Stand type)	A	○
Medicine refrigerator	A	○
Suction pump, electric	C	○
Set, amputation	A	○
Set, bilateral tubal ligation	A	○
Set, caesarean section	A	○
Set, hysterectomy	A	○
Set, dilatation and curettage Set (D+C set)	A	○
Set, laparotomy	A	○
Set, minor surgery	A	○
Bowl, lotion, large	C	-
Defibrillator	C	-
Ear syringe	C	-
Instrument tray, large	C	-

Equipment Name	Priority	Final
Instrument trolley	C	-
Kick-about bowl	C	-
Operating table	C	-
Oxygen cylinder	C	-
Stand, single bowl	C	-
Wall clock	C	-
Set, decapitation	C	-
Set, general	C	-
Sterilization Room/Sluice Room		
Autoclave, electric, 400 litres	A	○
Bed pan washer	A	○
Sterilizing drum, large	A	○
Sterilizing drum, medium	A	○
Ultrasonic cleaner	C	-
3. Surgical Ward (Caesarean)		
Nurse Station		
Desk	C	-
Chair	C	-
Equipment Cabinet	C	○
Wastebin with lid	C	○
Treatment Room		
Vaginal speculum, small	A	○
Vaginal speculum, medium	A	○
Vaginal speculum, large	A	○
Dressing tray, medium	A	○
Dressing trolley	A	○
Dressing set	A	○
Treatment table	A	○
Ward		
Thermometer, digital	A	○
Salter scale	A	○
Weighing trousers	C	○
BP machine, adult	A	○
Glucometer	A	○
Medicine trolley	A	○
Drip stand	A	○
Hospital bed (Adult)	B	○
Bed-side cabinet, hospital model	C	○
Infant cot	B	○
X-ray equipment (Mobile type)	A	○
Side Ward		
Hospital bed (Adult)	A	○
Bed-side cabinet, hospital model	B	○
4. Physiotherapy Dept.		
Physiotherapy Room		
Therapeutic Ultrasound Machine	A	○
Infra-red Irradiation Machine	A	○
Short wave diathermy	A	○
Infra red, Lumber sacral	A	○
Quadriceps Bench	A	○
Treadmill Machine	A	○
Ultraviolet, Limp	A	○
Treatment couch	A	○
Elliptical	A	○

Equipment Name	Priority	Final
Electrical Cervical/Lumber traction	A	○
Cathre Smith suspension	B	○
Stationary bike	A	○
Wave therapy	A	○
5. Outpatient Dept. (TB)		
Consultation Room-1 (TB)		
Examination desk set	B	○
Equipment cabinet	B	○
Wastebin with lid	B	○
Treatment table	A	○
Bed-side screen	B	○
Torch, medical, pen-sized	A	○
Thermometer, digital	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
X-ray film viewer (Wall mounted type)	A	○
Existing Facility		
6. Medical Ward		
Nurse Station		
Desk	C	-
Chair	C	-
Equipment Cabinet	C	○
Wastebin with lid	C	○
Ward		
Bed pan	A	○
Excretion care set	A	○
Thermometer, digital	A	○
Weighing scale, adult	A	○
Stethoscope, binaural	A	○
BP machine, adult	A	○
BP machine, child	A	○
Glucometer	A	○
Medicine trolley	A	○
Dressing tray, medium	A	○
Dressing trolley	A	○
Dressing set	A	○
Drip stand	A	○
Oxygen concentrator	A	○
Suction pump, electric	A	○
Pulse oximeter, finger type	A	○
Hospital bed (Adult)	C	-
Hospital bed bednet, treated	C	-
Infant cot	C	-
Infant cot bednet, treated	C	-
Hospital bed cradle	C	-
Traction frame	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Sputum mug	C	-
Thermometer jar	C	-
Salter scale	C	-
Weighing trousers	C	-
Diagnostic set for Eye and ENT	C	-
Rapid Diagnostic Test kits for malaria	C	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Autoclave, electric, small	C	-
Sterilizing drum, small	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Instrument tray, medium	C	-
Instrument tray, large	C	-
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
Oxygen cylinder	C	-
7. Maternity Dept.		
Nurse Station		
Desk	B	-
Chair	B	-
Equipment Cabinet	B	○
Wastebin with lid	B	○
Pre-natal Room		
Examination couch, gynecological	C	○
Footstool, one-step	A	○
Examination light	A	○
Traube	A	○
Vaginal speculum, small	A	○
Vaginal speculum, medium	A	○
Vaginal speculum, large	A	○
RPR rotator	B	-
Bed-side screen	C	-
CTG machine	C	-
Fetal heart detector	C	-
Delivery Room		
Instrument Cabinet	B	○
Instrument trolley	A	○
Drip stand	A	○
Footstool, one-step	A	○
Operating stool, revolving	C	○
Vaginal delivery/episiotomy set	C	○
Kick-about bowl	B	○
Manual vacuum aspiration (MVA) kit	C	○
Vacuum extractor, electrical	A	○
Weighing scale, infant, beam type	C	○
Suction pump, electric	C	○
BP machine, adult	A	○
Ultrasonic diagnostic device (Mobile type)	A	○
Delivery bed	C	-
Bed-side screen	C	-
Wall clock	C	-
Recovery Room		
Hospital bed (Adult)	C	-
Infant cot with mattress	C	-
Bed-side screen	C	-
Bed-side cabinet, hospital model	C	-
Over-bed table	C	-
Bed pan	C	-
Drip stand	C	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Post-natal Room		
Bed pan	C	○
Premature Infant Room		
Thermometer jar	C	-
Rapid Diagnostic Test kits for malaria	C	-
Autoclave, electric, medium	C	-
Sterilizing drum, small	C	-
Sterilizing drum, medium	C	-
Timer, 60 min	C	-
Indicator, TST control spot	C	-
Instrument tray, medium	C	-
Instrument tray, large	C	-
Bowl, lotion, small	C	-
Bowl, lotion, medium	C	-
Bowl, lotion, large	C	-
8. Casualty		
Wheelchair	A	○
Stretcher	A	○
Hospital bed (Adult)	A	○
Hospital bed cradle	A	○
Bed-side screen	B	○
Over-bed table	A	○
Bed pan	A	○
Excretion care set	A	○
Drip stand	A	○
Oxygen concentrator	A	○
Suction pump, electric	A	○
Ambu bag for adults	A	○
Ambu bag for children	A	○
Diagnostic set	A	○
X-Ray film viewing box (Stand type)	A	○
Hospital bed bednet, treated	C	-
Bed-side cabinet, hospital model	C	-
Sputum mug	C	-
9. Laboratory Dept.		
Anaerobic jar	A	○
Analytical balance	A	○
Autoclave for laboratory, medium	A	○
Binocular microscope	A	○
Blood bank refrigerator	A	○
Bunsen burner	A	○
Centrifuge, small	A	○
Differential counter	B	○
Flammable liquid cabinet	B	○
Hot air oven	B	○
Hot plate, controlled temperature	B	○
Laboratory incubator, medium	A	○
Laboratory refrigerator/freezer	A	○
Microhaematocrit centrifuge	B	○
Micropipettes, automated	A	○
pH meter	A	○
Roller/mixer	B	○
RPR rotator	A	-
Spirit lamp	B	-

<i>Equipment Name</i>	<i>Priority</i>	<i>Final</i>
Timer	A	○
Water bath	A	○
Water distiller	A	○
CD4 counting machine	C	-
Chemistry analyser	C	-
Haematology analyser	C	-
Voltex for CD4 counting	C	-
10. Maintenance		
Maintenance Set	A	○
11. Mortuary		
20 litre bucket	C	-
Autopsy saw	C	-
Autopsy set	C	-
Autopsy table	C	-
Mortuary fridge/unit (4 trays)	C	-
Mortuary trolley	C	-
Organ table	C	-
Spring balance	C	-
12. Ambulance		
Ambulance	C	-

(2) Facility Plan

1) Reviewing Necessity and Adequacy of Requested Facilities

The necessity and adequacy of the final request by Zambia for upgrading as level 1 hospital was reviewed as described below:

① Review of Necessity and Adequacy of the Requested Functions

Conclusion Common among the Three Hospitals

a) General Outpatient Services

Improvement of OPD functions including general reception is given weight to because existing OPD facilities are not enough for the number of patients. New facilities should be constructed, because all of the three hospitals have highly deteriorated OPD building whose spatial structure has not been functional after several renovations. The environment of diagnosis & treatment rooms at dentistry and otorhinolaryngology shall be improved, and functional space should be provided in paediatrics and tuberculosis (hereinafter referred to as “TB”).

b) Renovation of Operation Dept. into Emergency by Zambia

Operation department was built by Zambia in recent years, but the facility is not sufficient without sterilization room etc., and not much utilized either. Improving quality of operation facilities by new construction is preferable for the balance of newly upgraded hospital as comparing with the maternity ward and the surgical ward. Therefore, current Operation Dept. building will be renovated to emergency department by Zambia, since they built it on vacant space of existing land, which access from the main gate is quite easy.

c) Consolidation of ART with Outpatient

In order to eliminate discrimination against ART patients and improve efficiency of services and staff distribution, the DHO suggested consolidating possibility of ART and the general outpatient departments. UHCs which have already consolidated them was surveyed and compared, and discussions with Zambian persons who work on. Finally, mutual agreement is that consultation rooms shall be reserved in the outpatient department for the expected number of ART patients in the future, and ART operation will be as it is for the time being.

d) Paediatric Ward and Isolation Ward

Because the health care facilities in Zambia are providing these medical services in separate wards, taking advantage of the functions required from these wards the existing facilities shall be continuously in use.

e) Office, Conference Room, and Library

These rooms do not directly affect upgrading to level 1 hospital or require high construction technology. They are excluded from the scope of the Project except for outpatient reception and some areas related to medical services. Then existing facilities will be used or will be renovated or construct by Zambia as necessary.

f) Power Generator

Because of frequent power failure, all three hospitals have a small power generator. However, as the sizes, imperiousness, and importance will be upgraded, a backup power generator shall be installed for newly built facilities.

g) Water Supply and Drainage Facilities

Unlike Matero and Chilenje Lv1Hs already improved, the project facilities in the three hospitals do not connect public services of water supply or sewage. City water is supplied to mortuary of Kanyama Lv1H, but it is not sufficient for the entire hospital. In the Project, it is necessary to secure water supply and drainage facilities including septic tanks and infiltration pipes on the premises.

Special Subjects of Each Hospital

Chipata Lv1H

a) Examination Department

As outpatient department will be constructed, current OPD/Lab./Admin. building is possible to renovate after the function leave for new building. Considering priority analysis, new buildings will contain medical imaging which requires high construction technology such as shielding, while Zambia will renovate the existing OPD/Laboratory/Administration building to improve laboratory.

b) Physiotherapy

Services are not sufficiently provided for shortage of space. The room needs a certain size, but high construction technology is not necessary. Therefore, Zambia will improve the room in a part of existing OPD/Laboratory/Administration building..

c) Delivery (Maternity Department)/Maternity Ward

The department in the existing facility is small, and support space is insufficient. Besides, unlike other hospitals, improvement of the delivery facility of Chipata Lv1H was not included in the Millennium Development Goal Initiative (MDGi) of UNICEF, it should be included in this project scope.

d) Wards (Male/Female)

The aim is adding beds to satisfy the required number of beds based on the survey result and constructing a functional network of departments after the Project is completed. Scope of the Project should be the surgical ward in order to provide care for patients after Caesarean section.

e) Maternal and Child Health, ART/VCT, and TB

For the continuous function of UHC service in the community, the department of maternal and child health will continuously provide services to many users. On the other hand, it is not the function specifically upgraded into level 1 hospital. Therefore, in the process of consolidation of ART with outpatient services as described as a common subject above, Zambia will perform expansion and improvement by their own.

As well as maternal and child health, VCT functions at health centre level. VCT will not be covered by the Project in order to avoid any overlap, because there is support of other donors such as CIDRZ.

TB shall be constructed, because the current facility will be demolished at the stage of securing a site for the Project.

f) Kitchen/Laundry, Incinerator, Mortuary

These facilities shall be out of the project scope, because they are not directly connected to level 1 hospital functions and other donors have provided assistance to the existing facilities.

Kanyama Lv1H

a) Examination Department

Medical imaging which requires high construction technology such as shielding shall be newly constructed, because existing facility for medical imaging is not safe not to equip shielding. Current laboratory does not have suitable structure with drainage treatment, it shall be newly constructed as well.

b) Physiotherapy

Services are not sufficiently provided for shortage of space. The room needs a certain size, but high construction technology is not necessary. Therefore, Zambia will improve the room in a part of existing OPD/MCH/Physiotherapy /Administration building.

c) Delivery (Maternity Department)/Maternity Ward

As new delivery building has been almost completed with UNICEF's assistance, construction is not necessary. Only the prenatal ward shall be constructed to make up for the shortage of required function.

d) Wards (Male/Female)

According to analyse of the number of required beds, Kanyama Lv1H will have more inpatients and has more bed shortage than the other two hospitals. In order to fill the insufficiency of beds, surgical and medical wards shall be newly constructed including for Caesarean section.

e) Maternal and Child Health, ART/VCT, and TB

The department of maternal and child health has been functioning as UHC service in the community. As it is not the function specifically upgraded into level 1 hospital or does not require particularly high construction technology, it shall be out of the project scope. Zambia will renovate the current outpatient department which will be available after the services move out to new facility, in order to expand department of maternal and child health.

As the ART/VCT functions at the health centre level as well, Zambia will consolidate it with OPD in the future and will be out of the project scope.

As existing TB building is placed at an independent location appropriately on the premises and the management is thorough, it shall be out of the project scope.

f) Kitchen/Laundry, Incinerator, Mortuary

These facilities shall be out of the project scope, since they are not directly connected to level 1 hospital functions and existing facilities are functioning without any problem.

Chawama Lv1H

a) Examination Department

Existing laboratory was recently improved by another donor. No services of medical imaging are currently provided, and high technology of construction such as shielding is required in order to provide services safely. Therefore, considering priority classification, Medical imaging shall be constructed in a new building and current laboratory will be as it is in existing Laboratory/OPD building.

b) Physiotherapy

Physiotherapy department will shall be removed into new facility considering cooperation between departments and patients' access. As current physiotherapy building has relatively high ceiling and is possible to convert, it shall be continuously used as it effectively is.

c) Delivery (Maternity Department)/Maternity Ward

The delivery department recently completed provides good services, and a post-natal ward supposed to be constructed by UNICEF's Millennium Development Goals initiative (MDGi) by the end of 2016. Therefore, it was agreed to be out of the project scope. Some months after the agreement, the MOH requested upgrading of the delivery department to JICA, since it becomes for MDGi associated with the problem of land use of neighbouring playground. However, it is ended up to be out of scope due to restriction of Japanese project budget's further expansion. The MOH also agreed, because the delivery department can be upgraded by renovation of existing physiotherapy building after the project completion.

d) Surgical Ward (Male/Female)

As analysis of the number of required beds and reviewing the layout and connection among departments including the existing building after the Project is completed, the project scope includes the surgical ward including patients after Caesarean section.

e) Maternal and Child Health, ART/VCT, and TB

The department of maternal and child health has been functioning as UHC service in the community. As it is not the function specifically upgraded into level 1 hospital or does not require particularly high construction technology, it shall be out of the project scope. Zambia will renovate the current outpatient department which will be available after the services move out to new facility, in order to expand department of maternal and child health.

As the ART/VCT functions at the health centre level as well, Zambia will consolidate it with OPD in the future and will be out of the project scope.

TB shall be constructed, because the current facility will be demolished at the stage of securing land for the Project through discussions with the community.

f) Kitchen/Laundry, Incinerator, Mortuary

These facilities shall be out of the project scope, because they are not directly connected to level 1 hospital functions and existing facilities are functioning without any problem.

In terms of mortuary, Zambia will relocate and reconstruct from front gate area to the back gate access in order to secure new construction space and for cultural considerations.

② Consideration of Validity from the View of Human Resources and Budget

Based on standard deployment reference of level 1 hospital, 111 employees for medical staff and 98 for administrative and support staff are required. In terms of medical staff, a shortage of three to six doctors, one to two clinical officers (anaesthesia), and one radiologist (with a total of 42 staff in Chipata, 46 staff in Kanyama, 39 staff in Chawama). In addition, shortages are also observed for many administrative and support staff positions, including two medical equipment technologists (with a total of 65 staff in Chipata, 61 in Kanyama, 78 in Chawama).

The above compared standard deployment reference of level 1 hospital covers all locations in Zambia. The MOH just formulated new deployment reference for urban level 1 hospitals to manage Matero and Chilenje Lv1Hs, which were upgraded as the very first level 1 hospitals in Lusaka District in the Phase 1 Project. Therefore, more employees will be required than above described with the country's standard deployment reference.

The procedures for increasing the number of staff involve an application or personnel change to be submitted to the MOH headquarters from a provincial medical office. Then, when approved at the MOH, the recruitment to the post will be carried out with the allocated budget by the Ministry of Finance. The MOH agreed to place the necessary human resources (medical, administrative and support staff) in line with the placement reference of the standards for the level 1 hospitals when facility construction completes.

The Human Resource Department at the MOH expressed the view that there should be no problem in filling the positions because of the location of the project facilities in the three hospitals, which are in the capital, Lusaka. The government of Zambia states that the completion of facility construction and the increase in health care workers on the front line will be part of the 2016 fiscal year budget and the medium-term budget from fiscal 2016 to 2018. Personnel expenses of the MOH have already increased by 145.3%. The feasibility of acquiring the necessary health workforce to operate medical equipment and to work in the operation theatre, such as doctors, registered theatre nurses, clinical officers (anaesthesia) and radiographers, is high because of the number of graduates in these areas.

(3) Medical Equipment Planning

1) Medical Equipment Considerations

Summaries of medical equipment considerations for each department of the project facilities (Chipata Lv1H, Kanyama Lv1H and Chawama Lv1H) are described below.

Below are summaries of equipment considerations for each department of the project facilities (Chipata Lv1H, Kanyama Lv1H and Chawama Lv1H).

Chipata Lv1H

Consultation Rooms:

The current consultation rooms are equipped with only desks and stethoscopes. Thus, the adequate quantities of examination tables, examination instrument sets, scales and the like will be procured for each consultation room. Note that, for gynaecology department examination rooms, the plan calls for gynaecological examination tables in place of examination tables.

Medical Imaging:

Since a private company currently owns and operates the X-ray equipment, the plan calls for X-ray equipment. Also, the hospital currently uses portable ultrasonic diagnostic device manufactured in China, but it is aging and the image quality is poor, and there is no printer; therefore, it will be updated.

Dental:

The dental chairs are aging, the trays are showing rust and the handpieces are in unusable condition. The plan calls for dental units that each comprises a chair, tool tray, handpiece and light. In addition, the dental X-ray units will be updated because they are out of order. Radiation protection spaces will also be created.

Maternity:

The plan calls for gynaecological examination tables for Obstetrics Department treatment rooms. The plan does not call for birthing tables in birthing rooms because UNICEF has already provided them.

Laboratories:

The hospital already has biochemical analysers, haemocytometers and other name-brand equipment designated and installed by the MOH. Thus, none of this inspection equipment is planned. In addition, the water vapour distillation systems for inspection instruments will be updated because the current ones are aging.

Pharmacy:

In light of the water quality in Lusaka District, a water vapour distillation system is planned.

NICU:

The plan calls for infant warmers to enable the hospital to care for prematurely born infants to a certain extent in an effort to reduce the burden of care currently placed on UTH.

Maintenance:

The plan calls for tool sets to enable the hospital to conduct preventive maintenance and simple repairs of equipment.

Kanyama Lv1H

General Outpatient Department:

The General Outpatient Department lacks stretchers and wheelchairs. Thus, the plan calls for the procurement of that equipment to be shared among the consultation rooms.

Ophthalmology and ENT:

These departments currently lack equipment. Thus, the plan calls for ophthalmoscopes, auriscopes and laryngoscopes as the minimum required sets of instruments for diagnosis.

Treatment Rooms:

The rooms currently lack equipment. Thus, the plan calls for medical tables, sets of medical instruments, sets of drainage instruments and the like.

Dental:

The plan calls for aging of dental units and dental X-ray unit and three sets of dental instruments in light of the time required to sterilize them.

Laboratories:

The hospital already has biochemical analysers, haemocytometers and other name-brand equipment designated and installed by the MOH. Thus, none of this inspection equipment is included in the plan, and only replacements for aging microscopes, centrifuges and the like are planned.

Medical Imaging:

This hospital lacks the X-ray equipment and ultrasonic diagnostic device required of a level 1 hospital. Thus, the plan calls for the procurement of new equipment.

Chawama Lv1H

Dental:

The plan calls for updating the aging dental units and dental X-ray unit. The dental unit compressor has a short service life because it is located outdoors, exposed to the elements. Thus, the plan calls for a silent, indoor compressor.

Treatment Rooms:

The counterpart requested autoclaves, but the plan calls for the establishment of a central sterile services department (CSSD), which will include autoclaves. Thus, this was assigned a priority level of C.

Medical Imaging:

This hospital lacks the X-ray equipment and ultrasonic diagnostic device required of a level 1 hospital. Thus, the plan calls for the procurement of new equipment.

Laboratories:

The hospital already has biochemical analysers, haemocytometers and other name-brand equipment designated and installed by the MOH. Thus, none of this inspection equipment is planned, and only incubators required to cultivate specimens are planned.

2-2-2-2 Site Planning

(1) Chipata Level 1 Hospital (Lv1H)

1) Shape of the Site, Surrounding Environment and Infrastructure Situation

The outpatient department of the existing Chipata Lv1H is located at the centre of the approximately 0.7ha site which faces the front road on the southeast, surrounded by other buildings. There used to be staff housing of approximately 2,300 m² in the west of the existing Chipata Lv1H, which will be cleared and used for extension. By removing part of existing facility, land near the main gate has been approved as construction site by the government of Zambia, which has secured the site to implement this plan effectively. The site is sloping down toward the east, and there is a difference of elevation for about 1.5m in the land where construction is possible.

It is located from the middle of the city toward the north, and the main entrance is at about 100m along the railway from Kasangula Road, 2km east from Great North Road which leads to Copperbelt Province. Across a sloping site about 40m wide, the railway runs from the southwest to the northeast. As there is a sewage lagoon approximately 1km from the south side and the area is densely crowded with houses, the hygienic environment is not good, which makes the roles of community hospital more important.

Electricity and telephone services are provided to the existing facility, but not city water or drainage. While well water is currently used, it has been assessed that it can be managed by constructing a new well, a septic tank and a soak pit (pipes) when the facility is expanded. The area is not sufficiently equipped with rainwater infiltration facilities, but no problem is expected at the hospital site as the water will be disposed outside the site which is surrounded by sloping lands. General waste is collected in the area, and hospital waste is incinerated by the incinerator on the premises.

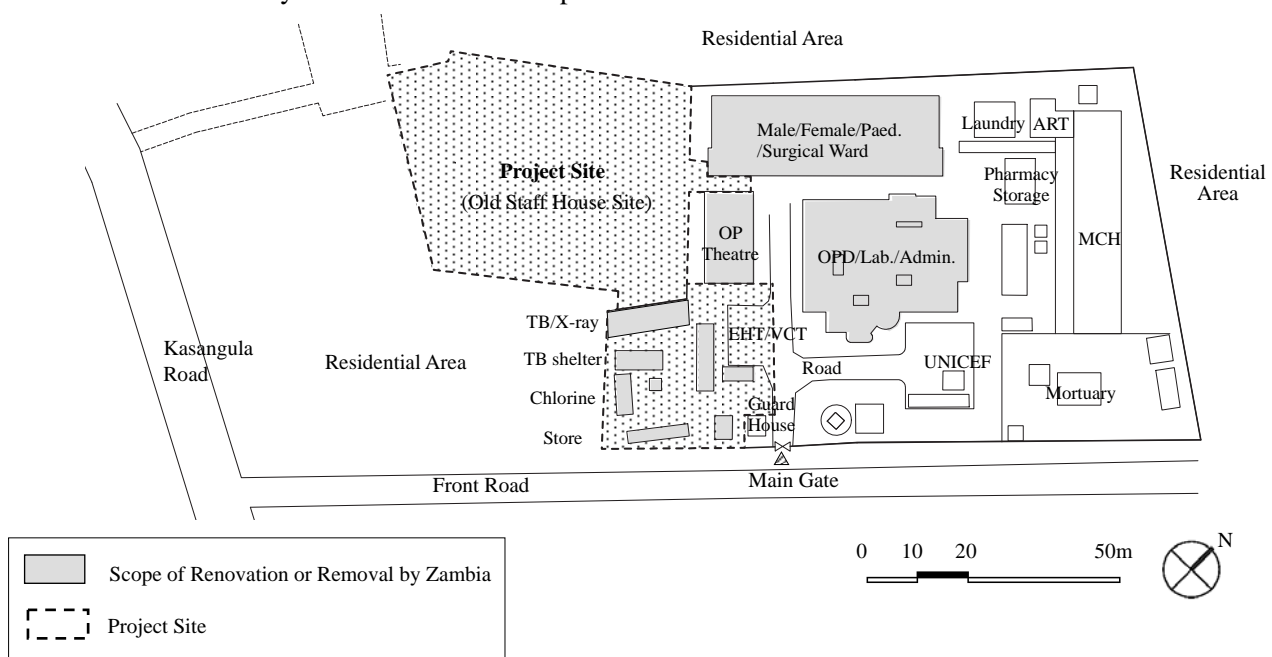


Figure 2-1 Chipata Lv1H Surrounding Environment of Construction Site

2) Land Use Planning

The front gate of Chipata Lv1H is connected with the road on the southeast. Across a passway within the hospital site from there, a new entrance and an electricity/machinery building will be constructed on the other side of the existing OPD building. A new building including the outpatient, operation, and maternity departments will be constructed on the land extended from casualty building (existing operation theatre building).

Based on the current situation of the existing facility and the analysis results of the requested plan as described above, a master plan to upgrade Chipata Lv1H will be developed in collaboration with the MOH. On the basis of the master plan, the layout of the target facility will be planned keeping in mind the following points:

- ① Appropriate routing to make medical services more efficient
 - Compacting outpatient department and the central examination department, ward area
- ② Coordination with the existing facilities
 - The existing building and the target facilities of this plan will be adjoined to shorten the service flow lines between related department.
- ③ Continuous provision of medical services
 - Layout plan that enables to secure the access from the front gate and construction access routes will be developed so that medical services can be continued during the construction period.

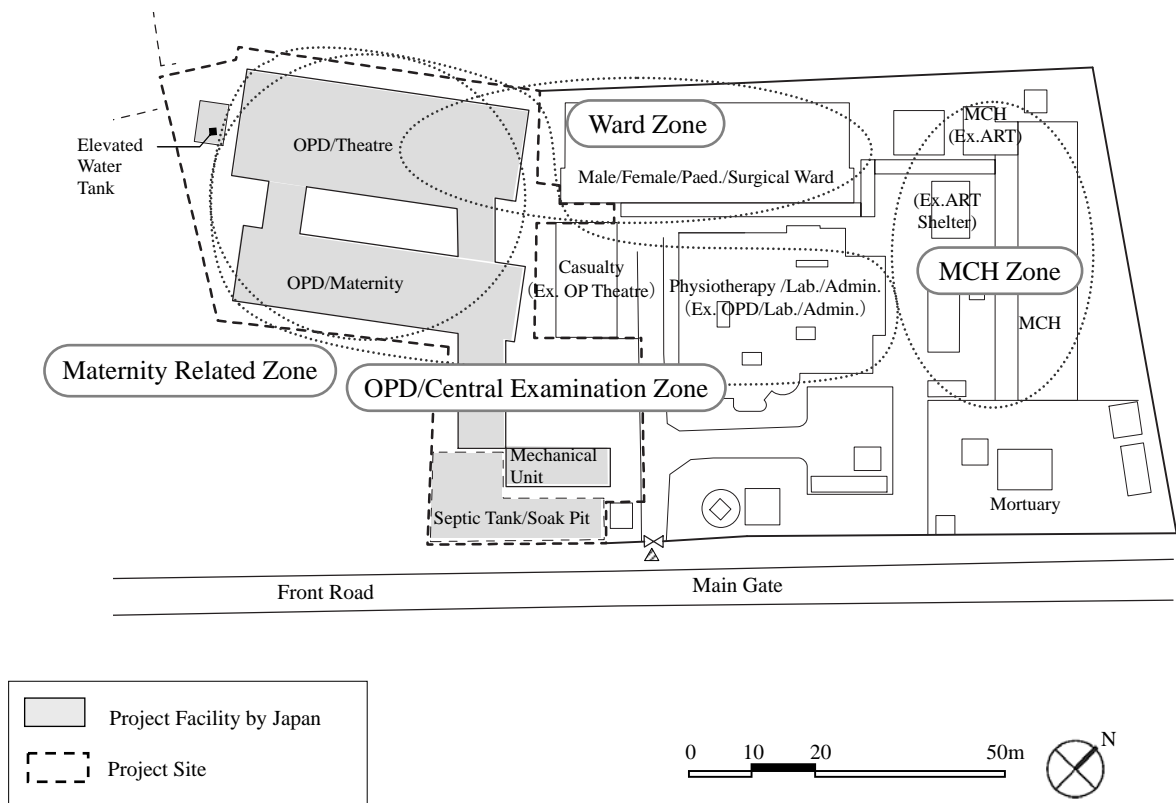


Figure 2-2 Relation between Chipata Lv1H Master Plan and the Project

3) Facility Layout Planning

The target departments in the Project include outpatient department (general, special), operation, maternity, and ward. Although the existing site is small, those new facilities will be planned with the layout that allows to strengthen coordination with the casualty building (existing OP theatre building).

As the elevation varies within the site, minimum reclamation was performed at the ground level to a reasonable extent in the viewpoints of structure and equipment. Layout was planned in the site to minimize elevation gap in the building so that medical services can be provided smoothly.

Considering coordination with the existing facility, prevention of in-hospital infections, convenience of management and operation, clear zoning among departments and future possibility of extension, the departments will be divided into three buildings: OPD/Maternity building and OPD/Theatre building will be located back area facing each other through courtyard, and mechanical units will be located near the gate for the convenience of maintenance.

The buildings will be linked with each other with exterior corridors so that coordination between facilities can be enhanced. Sufficient space including the courtyard will be given between the buildings so that all of the buildings will have sufficient lighting and ventilation.

As an emergency power generator will be placed in the mechanical units, it shall be close to access in order to facilitate the access of fuel and electricity to the road within the hospital site.

The elevated water tank for water supply will be placed on the northwest of the Project site which is at highest ground level within the site.

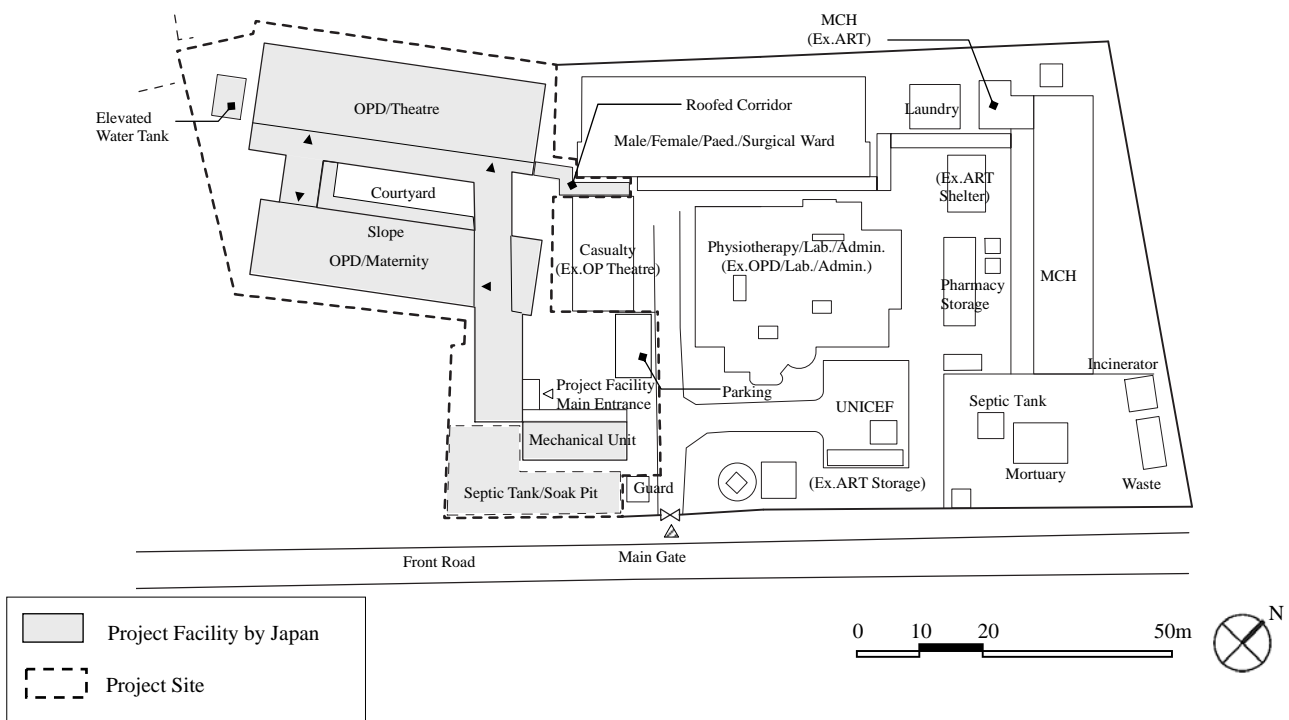


Figure 2-3 Existing facilities and the Layout Plan of Chipata Lv1H Project Facilities

(2) Kanyama Level 1 Hospital (Lv1H)

1) Shape of the Site, Surrounding Environment and Infrastructure Situation

The existing site of Kanyama Lv1H, approximately 1.6ha, faces roads on the northwest and partly on the southwest, and is otherwise surrounded by community buildings, a church and houses. The MCH/OPD building are located almost in the middle of the site. Because the building used to be a residence and was donated to Kanyama Lv1H, the structure is different from standard of the MOH at the time. It is surrounded by other buildings separately by function. There are four buildings for staff accommodations in the southeast part, where the MOH has considered how to improve the living environment of the staff, and the relevant staff members have agreed and signed to vacate the buildings in order to cooperate for hospital improvement. With that, the area of the hospital construction site has become 0.4ha, which allows this plan to function efficiently.

Kanyama Lv1H is a core medical facility for three new zones and is located in the southwestern area near the city centre which is densely crowded with houses. Floods occur frequently in Kanyama District, and there has been a case of 40-50cm submersion. Under such situation, the environment has become less hygienic and there are many cases of cholera. Therefore, a temporal facility for cholera measures is organized within the hospital.

Low-voltage pressure electricity of 380V/230V is sent from a ZESCO converter installed on a platform around 30m from the north-western side of the site to the existing switchboard through aerial cable. As for telephone in the existing facility, no outside line of ZAMTEL is connected. Regarding city water, it is supplied to mortuary building in the site from the north-western side of the site near the front road through 30mm pipe and 20mm meter. Since the water pressure is low, a well is also used. The World Bank is planning to construct public sewage, but it will not be completed until 2030, and no drainage facility has been equipped. It has been assessed that it can be managed by constructing a new well, a septic tank and a soak pit (pipes) when the facility is expanded. Rainwater drainage in the area is not sufficient, and it is necessary to take measures such as new embankment in order to prevent flooding.

General waste is collected and reclaimed once a week by the city. Therefore, waste generated from the hospital is separated into general waste and medical waste, and the latter is incinerated by the incinerator located in the north-eastern side of the hospital site.

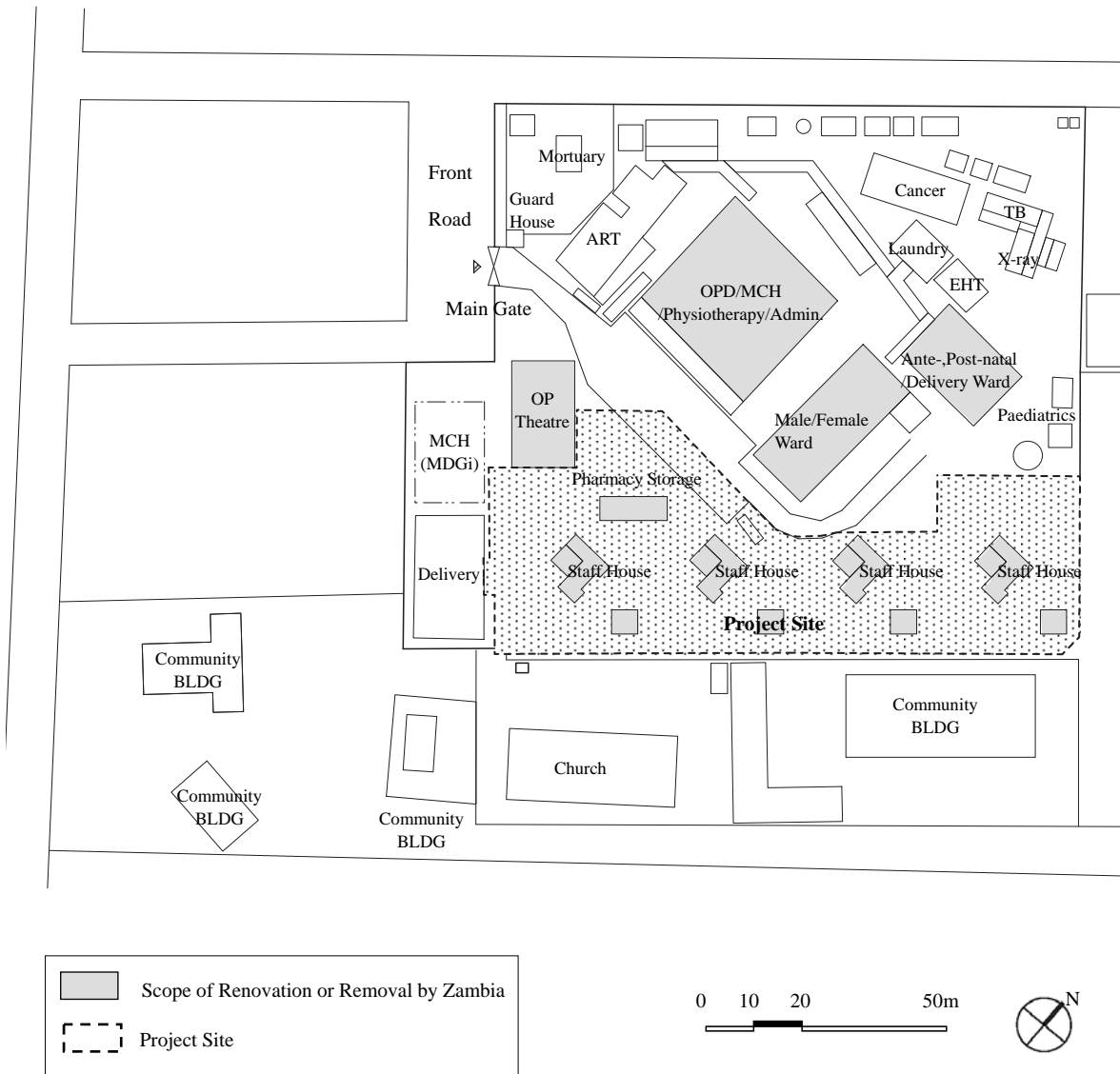


Figure 2-4 Kanyama Lv1H Surrounding Environment of Construction Site

2) Land Use Planning

The road on the southwestern side of Kanyama Lv1H is connected to the front gate. Across a road within the hospital site from there, the entrance of the planned building will be constructed on the other side of the existing outpatient department. Operation and maternity departments shall be placed at a location adjacent to casualty building (existing OP theatre building) and existing delivery department, connected to which ward and outpatient departments will be placed.

Based on the current situation of existing facility and analysis results of the requested plan as described above, a master plan to upgrade Kanyama Lv1H will be developed in collaboration with the MOH. On the basis of the master plan, the layout of the project facility will be planned keeping in mind the following points:

- ① Appropriate routing to make medical services more efficient
 - Maternity department and ward will be consolidated respectively.
- ② Coordination with the existing facilities
 - The facilities covered by the Project will be constructed near the existing building in order to shorten the service traffic between wards and maternity department respectively.
- ③ Continuous provision of medical services
 - Layout plan that allows access from the south-eastern side will be developed so that medical services can be continued during the construction period.

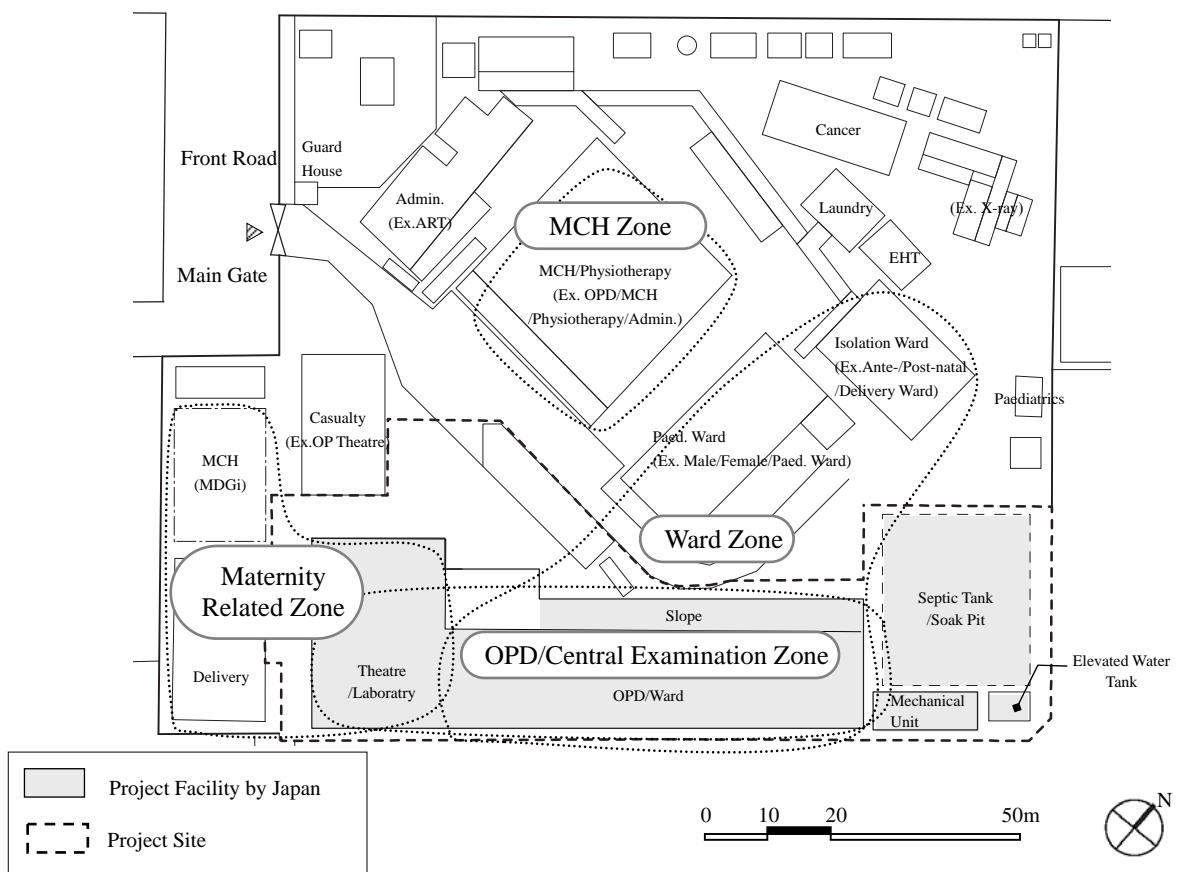


Figure 2-5 Relation between Kanyama Lv1H Master Plan and the Project

3) Facility Layout Planning

The departments covered by the Project include outpatient department (general, special), central examination (operation, medical imaging, clinical laboratory) and ward (maternity, surgical and medical). Due to form of the land and each function, above mentioned departments will be physically divided into two building: Theatre/Laboratory and OPD/Ward buildings. OPD/Ward building will be faced to passway through the hospital site on the north-eastern side for better access and coordination with the existing ward. Theatre/Laboratory building will be placed near existing delivery building and the casualty building (existing operation theatre building) to improve coordination among departments. The existing parking lot will be demolished for access to the new facility, but it will be replaced to front area of OPD/Ward building. The existing delivery building and the casualty building will be linked with covered exterior corridors to new hospital building, so that patients and staff can travel smoothly and coordination between facilities can be enhanced.

As an emergency power generator will be placed in the mechanical unit, it shall be close to access in order to facilitate the access of fuel to passway within the hospital site. The elevated water tank for water supply will be placed next to the mechanical unit.

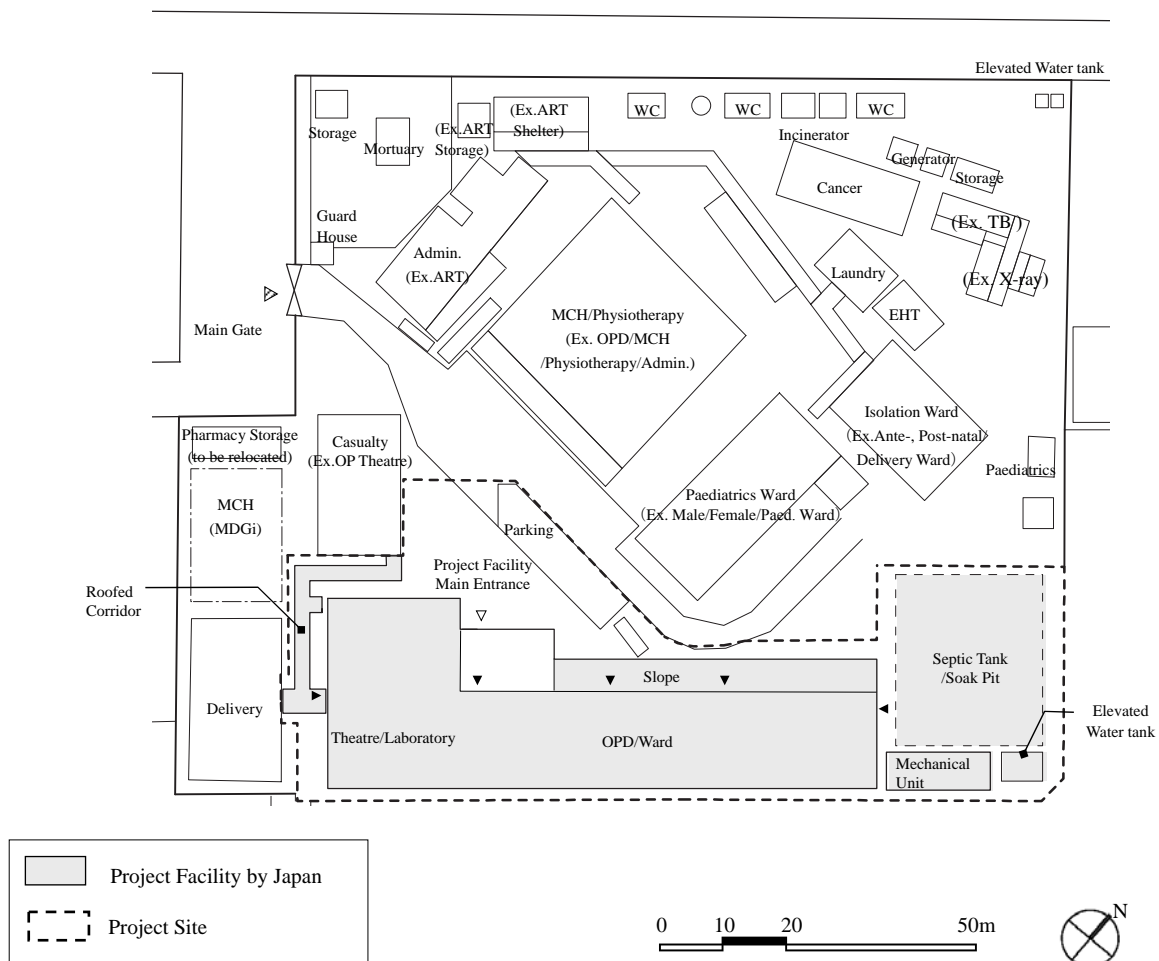


Figure 2-6 Existing Facilities and the Layout Plan of Kanyama Lv1H Project Facilities

(3) Chawama Level 1 Hospital (Lv1H)

1) Shape of the Site, Surrounding Environment and Infrastructure Situation

The existing site of Chawama Lv1H, an area of approximately 1.0ha, faces the road on the east, and is surrounded by commercial facilities, a ground, and houses. The existing buildings are separately located almost in the middle of the hospital site. Land of post office on the north of the hospital site is approximately 1,700 m², which will be an extension of the hospital site. In addition, the MOH has announced that construction site will also include the site secured by removing existing facility near hospital gate.

The Chawama District is frequently flooded, sometimes as deep as 40-50cm from the ground.

Low-voltage ZESCO electricity of 380V/230V is sent from the east side of existing hospital to switchboard through aerial cable. City water is supplied from the east side of current hospital, but it is limited to some facilities and the water pressure is low as well as the supplying capacity. Therefore, as is the case with the current facility, it is necessary to construct a well on the premises and store water in an elevated water tank for water supply. Rainfall drainage is enabled by gutters on the east side of the hospital. Public sewage is not provided, so it is necessary to drain by installing a soak pit.

General waste is collected twice a week by the district. Hospital waste is collected on the premises and incinerated by incinerator.

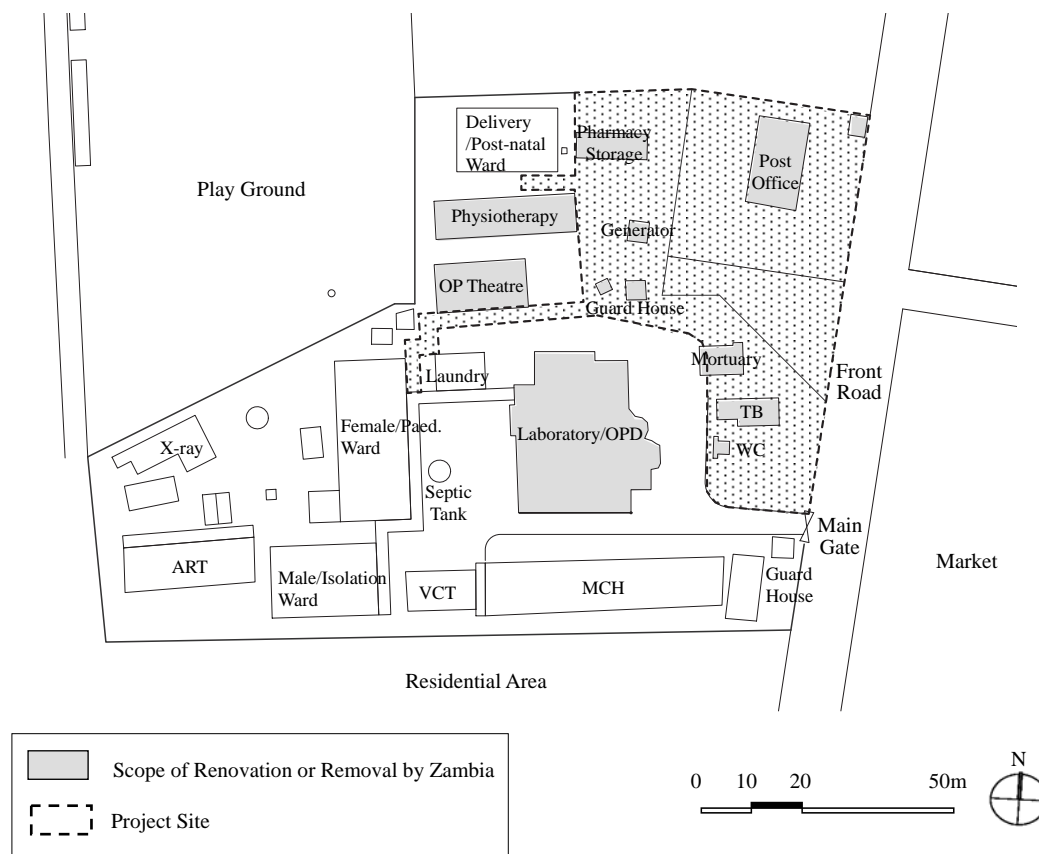


Figure 2-7 Chawama Lv1H Surrounding Environment of Construction Site

2) Land Use Planning

Front road is connected to main gate east side of Chawama Lv1H. Across pathway within the hospital site, entrance of new hospital building will be constructed on the other side of the existing OPD building for common access. Operation department will be placed next to casualty building (existing operation theatre building) and existing maternity building for convenience of emergency operation and Caesarean section. Furthermore, to physiotherapy and outpatient departments shall be connected.

A master plan to upgrade Chawama Lv1H will be developed in collaboration with the MOH. On the basis of the master plan, final layout of facility is planned. For instance, there is another access to mortuary from the front road, but Zambia will replace it to the western part to secure sufficient space for the Project and obtain mortuary access from another side because of the cultural viewpoint. Points to keep in mind in the Project are as follows:

- ① Appropriate routing to make medical services more efficient
 - Outpatient department and central examination department will be consolidated.
 - Maternity related departments will be consolidated.
- ② Coordination with the existing facilities
 - New hospital building will be constructed near the existing building in order to shorten service traffic between ward and maternity department.
- ③ Continuous provision of medical services
 - Layout that allows independent accesses of medical services reconstruction work will be developed so that medical services can be continued during the construction period.

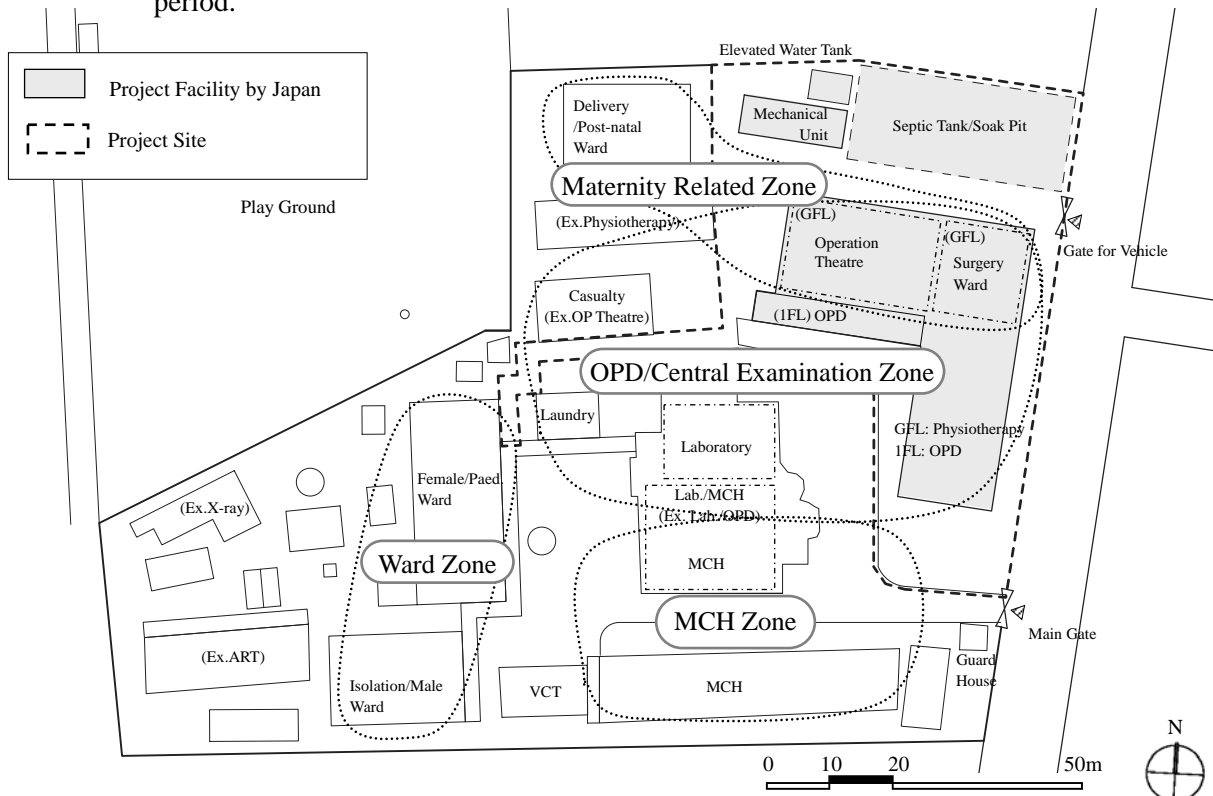


Figure 2-8 Relation between Chawama Lv1H Master Plan and the Project

3) Facility Layout Planning

Scope of the Project include outpatient (general, special), central examination (surgery, medical imaging, physiotherapy) departments and ward (surgery). Due to the shape of the land and functions, above departments will be divided into two buildings: OPD/Theatre and OPD/Physiotherapy. Considering the access convenience, the OPD/Physiotherapy building containing the building entrance will be located in front of the existing OPD building across the pathway within the hospital site. To facilitate the coordination among departments, OPD/Theatre building will be constructed near the existing maternity building and the casualty building (existing operation theatre building). The existing delivery building and the casualty building will be linked to each other with covered exterior corridors so that the patients and staff can travel smoothly and coordination between facilities can be enhanced.

As an emergency power generator will be placed in mechanical unit, in order to facilitate access of fuel and electricity to pathway within the hospital. Elevated water tank for water supply will be placed near the mechanical unit.

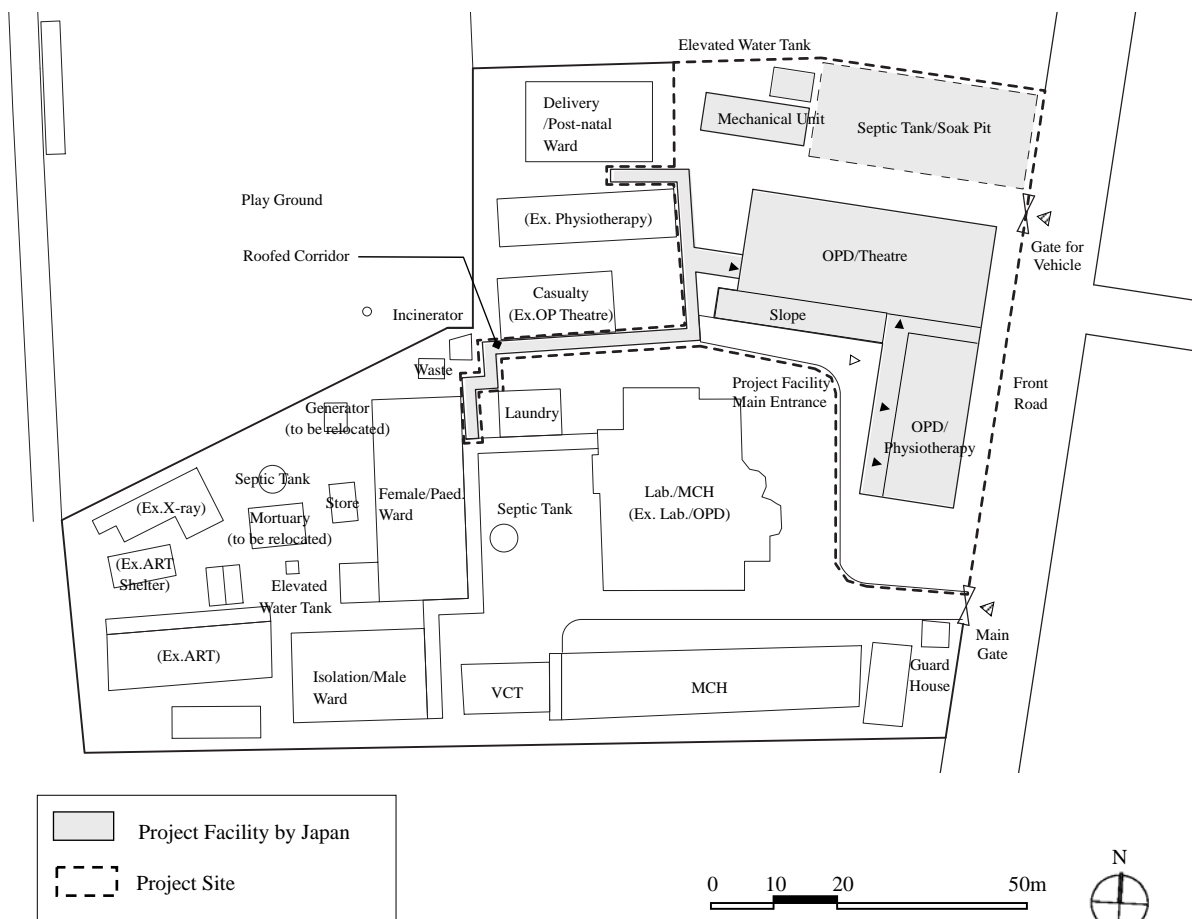


Figure 2-9 Existing Facilities and the Layout Plan of Chawama Lv1H Project Facilities

2-2-2-3 Facility Plan

2-2-2-3-1 Architectural Plan

① Floor Planning

(1) Setting Conditions for the Facility Size

In order to expect the size of departments, the numbers of basic unit will be calculated based on estimated numbers of patients in 2024, five years after the scheduled completion of construction in 2019, by using below pre-conditions. Estimated number of patients will be calculated based on the past data at each level 1 hospital and the population growth rate in Zambia.

1) Population in Lusaka and Estimated Number of Patients

As numbers of patients are expected to be proportional to the population, Lusaka District population in 2024 will be estimated with its population growth rate. Below calculation is done with using estimated population growth rate of 3.8% in Lusaka District between 2011 and 2020 according to the Population and Demographic Project 2011-2035 published by the Central Statistical Office in 2013.

The table below shows estimated population in 2024.

Table 2-7 Population Forecast of Lusaka

	2016	2017	2018	Project Completion 2019	2020	2021	2022	2023	5 Years After Completion 2024
Population	2,330,200								
Predicted Population		2,418,748	2,510,660	2,606,065	2,705,096	2,807,889	2,914,589	3,025,343	3,140,306
Annual Expected Increase	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%
Predicted Population Growth		88,548	91,912	95,405	99,030	102,794	106,700	110,754	114,963
Annual Growth (2016 as base)		3.8%	7.7%	11.8%	16.1%	20.5%	25.1%	29.8%	34.8%

8 years population growth prediction (2016-2024)	134.8%
Annual Expected Increase in Lusaka	3.8%

Source: “Population and Demographic Projections 2011 – 2035” Central Statistical Office

2) Prerequisites for Medical Activities at Each Level 1 Hospital

Emergency department is supposed to open 24 hours and 7 days a week and general outpatient department everyday except Saturday afternoon and Sunday.

The number of annual operating days and hours of each department is as follows. (“Lv1H” omitted from facility names in following tables)

Table 2-8 Working Hours in Each Level 1 Hospital

Department		Chipata		Kanyama		Chawama	
		Operating hours/day	Operating day/year	Operating hours/day	Operating day/year	Operating hours/day	Operating day/year
OPD	Weekday	8	286	8	286	8	286
	Saturday	5		4.5		4.5	
	Sunday	-		-		-	
ART	Weekday	8	260	8.5	260	8.5	260
	Saturday	-		-		-	
	Sunday	-		-		-	
TB	Weekday	8	260	8.5	286	8.5	286
	Saturday	-		5		4.5	
	Sunday	-		-		-	
Emergency Delivery	Weekday	24	365	24	365	24	365
	Saturday	24		24		24	
	Sunday	24		24		24	

※: 286 days = Everyday except half day on Saturday and all day on Sunday
260 days = Everyday except weekends (Saturday and Sunday)

Source: Interviews with Each Lv1H

(2) Calculation of Facility Size

1) Current Patients' Numbers in Each Department

The table below shows numbers of patients in each department for last three years between 2013-2015.

The average value over 3 years is taken to calculate unit numbers.

• Outpatient Department

Table 2-9 Current Number of Patients in Outpatient Department

		2013	2014	2015	Average
Chipata	OPD	167,463	193,820	212,185	191,156
	ART	45,645	46,853	46,365	46,287
	TB	8,847	6,856	7,549	7,750
Kanyama	OPD	86,733	183,397	281,709	232,553
	ART	NA	NA	NA	(56,308)
	TB	14,542	12,213	10,629	12,461
Chawama	OPD	176,576	201,522	183,419	187,172
	ART	44,984	35,335	38,751	39,690
	TB	10,300	12,427	11,437	11,388

Source: Records in Each Lv1H

Number of ART patients at Kanyama Lv1H was not recorded. Therefore, the number is created from number of ART patients at Chipata Lv1H (56,308 people) by multiplying ratio of general outpatients at Chipata Lv1H and Kanyama Lv1H (121.65%).

- Ward

Table 2-10 Current Number of Inpatients

		2013	2014	2015	Average
Chipata	Surgery (Caesarean)	-	38	161	-
	Medical (M/F)	1,146	1,310	2,112	1,522
	Paediatric	374	365	521	420
Kanyama	Surgery (Caesarean)	-	-	-	-
	Medical (M/F)	1,992	2,241	2,845	2,359
	Paediatric	755	900	1,271	975
Chawama	Surgery (Caesarean)	-	-	-	-
	Medical (M/F)	(791)	1,366	1,693	1,529
	Paediatric	465	547	338	450

Source: Records in Each Lv1H

Except some simple operations are conducted to patients at Chipata Lv1H, most surgical patients are referred or access directly to UTH and there is no surgical inpatient in other level 1 hospitals. As possible operations at level 1 hospital are mainly Caesarean section, and male surgical patients who require hospitalization are expected to be few, number of Caesarean section estimated from the below-mentioned number of general deliveries is used to calculate number of beds in surgery ward in the Project. The number of Caesarean deliveries is about 10% of total deliveries according to local hearing, and this rate is used as the estimated number of patients.

- Delivery

Table 2-11 Current Number of Delivery

		2011	2012	2013	2014	2015	Average
Chipata	General delivery*	4,803	5,127	5,640	6,293	7,123	5,797
	Caesarean section (about 10% of total)						644
Kanyama	General delivery*	6,892	7,111	7,267	7,907	8,104	7,456
	Caesarean section (about 10% of total)						828
Chawama	General delivery*	6,474	6,078	5,427	4,298	3,607	5,176
	Caesarean section (about 10% of total)						575

Source: Records in Each Lv1H

*: Total delivery = General delivery/0.9

1) Calculation of Size of Each Department

According to above factors, size (number of consultation rooms and beds) of each department at each level 1 hospital is calculated as shown the following tables.

- OPD

Table 2-12 Required Number of Consultation Rooms for OPD

		Annual No. of Outpatients (p/year)	Annual working days (day/year)	Opening hours (min/day)	Average No. of daily patients (p/day)	Rate of increasing population	Expected No. of daily patients in 2024(p/day)	Consultation rooms			
								Average consultation time per room (min*room/p)	Maximum No. of daily patients per room (p/day*room)	Required No. of consultation rooms	No. of rooms
								G	H=C/G	I=F/H	
Cipata	OPD (current service)	191,156	286	480	668.37	134.8%	900.73	3	160.00	5.62	6
Kanyama		232,553	286	480	813.12	134.8%	1095.80	3	160.00	6.84	7
Chawama		187,172	286	480	654.44	134.8%	881.95	3	160.00	5.51	6
Cipata	ART	47,153	260	480	181.35	134.8%	244.39	3	160.00	1.52	2
Kanyama*		57,362	260	510	220.62	134.8%	297.31	3	170.00	1.74	2
Chawama		39,690	260	510	152.65	134.8%	205.71	3	170.00	1.21	2
Cipata	TB	7,721	260	480	29.69	134.8%	40.01	3	160.00	0.25	1
Kanyama		12,461	286	510	43.57	134.8%	58.71	3	170.00	0.34	1
Chawama		11,388	286	510	39.81	134.8%	53.65	3	170.00	0.31	1

*Kanyama ART patients are assumed by proportion of Chipata OPD & ART patients. 121.65%

Average number of patients per day (persons / day) = Annual number of patients (persons / year) / Annual operating days (days / year)

Estimated average number of patients per day for 2024 (persons / day) = Average number of patients per day (persons / day) x Estimated patient growth rate (times)

Maximum number of patients who are consulted / treated in each room (persons / room * day) = Clinic open time (minutes / day) / Average amount of time a doctor spends with a patient per room (minutes * rooms / person)

Required number of rooms (rooms) = Estimated average number of patients per day for 2024 (persons / day) / Number of patients who consulted / were treated (persons / room * day)

- Ward

Table 2-13 Required Number of Inpatients' Beds

		Number of patients per year (persons/year)	Average days of hospitalisation (days/person)	Annual days of hospitalisation (days/year)	Rate of Increasing Population	Estimated No. of daily patients in 2024 (days/year)	Estimated No. of daily patients in 2024 (days/year) with 80% bed occupancy	No. of beds	No. of required beds	No. of beds by Japan	
		A	B	C=A*B	D	E=C*D	F=E/80%	F/365			
Chipata	Surgery (Caesarean)	644	3	1,932	134.8%	2,604	3,255	8.92	9	9	
	Medical (M/F)	1,522	4	6,088	134.8%	8,205	10,256	28.10	29	by MOH	
	Paediatric	420	4	1,680	134.8%	2,264	2,830	7.75	8	by MOH	
	* Current number of beds (excl. Maternity)										36
	Total										45
Kanyama	Surgery (Caesarean)	828	3	2,484	134.8%	3,348	4,184	11.46	12	12	
	Medical (M/F)	2,359	4	9,436	134.8%	12,716	15,896	43.55	44	44	
	Paediatric	975	4	3,900	134.8%	5,256	6,570	18.00	18	by MOH	
	* Current number of beds (excl. Maternity)										41
	Total										97
Chawama	Surgery (Caesarean)	575	3	1,725	134.8%	2,325	2,906	7.96	8	8	
	Medical (M/F)	1,529	4	6,116	134.8%	8,242	10,303	28.23	29	by MOH	
	Paediatric	432	4	1,728	134.8%	2,329	2,911	7.98	8	by MOH	
	* Current number of beds (excl. Maternity)										34
	Total										42

by MOH: Excluded scope, which will be executed by MOH by using previous beds after the Project

※: as of February 2016

Source: Records and interviews in Each Lv1H

Annual patient-days (days / year) = Annual number of inpatients (persons / year) x Average length of hospital stay (days / person)

Estimated patient-days for 2024 (days / year) = Annual patient-days (days / year) x Estimated patient growth rate (times)

Estimated patient-days when setting the bed occupancy to 80% (days / year) = Estimated patient-days for 2024 (days / year) / 80%

Number of beds needed (beds) = Estimated patient-days when setting the bed occupancy at 80% (days) / 365 days

- Delivery and Labour Ward Related

Scope of the Project includes the pre-natal room (including labour room), delivery room and post-natal room in maternity department at Chipata Lv1H, while only pre-natal room at Kanyama Lv1H which have received assistance for the rest from MDGi. None of the functions shall be in the scope at Chawama Lv1H for the same reason.

Table 2-14 Required Delivery Room and Beds for Maternity Ward

	Annual deliveries (p/year)	Annual working days (days/year)	Average daily deliveries (p/day)	Rate of increasing population	Estimated No. of patients in 2024 (persons/day)	Ante			Delivery			Post					
						Average waiting time (day/p) 16 hrs/p	No. of required beds	No. of required beds	No. of beds by Japan	No. of deliveries per bed (persons/day/bed)	No. of deliveries	No. of deliveries +1 (emergency)	No. of deliveries by Japan	Average recovery time (days/p) 8 hrs/p	No. of required recovery beds	No. of required recovery beds	No. of beds by Japan
						F	G=E*F		H	I=E/H		J	K=E*J				
Chipata	5,797	365	15.8822	134.8%	21.40	0.7	14.98	15	15	8	2.675	4	4	0.34	7.28	8	8
Kanyama	7,456	365	20.4274	134.8%	27.52	0.7	19.26	20	20	8	3.44	5	by MDGi	0.34	9.36	10	by MDGi
Chawama	5,176	365	14.1808	134.8%	19.11	0.7	13.38	14	by MDGi	8	2.38875	4	by MDGi	0.34	6.50	7	by MDGi

by MDGi :Excluded scope. Supported by MDGi

Source: Records and interviews in Each Lv1H

Average deliveries per day (persons / day) = Annual deliveries (persons / year) / Annual operating days (days / year)

Estimated average patients per day in 2018 (persons / day) = Average deliveries per day (persons / day) x Estimated patient growth rate

Required number of delivery bed (beds) = Estimated average patients per day in 2018 (persons / day) / Average deliveries per bed (persons / day * bed)

(3) Facility Plan of Chipata Level 1 Hospital (Lv1H)

1) Required Floor Space

Based on the number of necessary beds in each category and the number of rooms calculated above, the total required floor space shall be calculated through architectural plan. Size of each room is determined based on current state of existing facilities, with the Standard Plan of level 1 hospitals by the MOH and floor space of medical facilities in Japan (Architectural Design Data Corpus by the Architectural Institute of Japan, etc.) as references.

The layout of medical equipment planned in each room and number of patients/medical staff are comprehensively taken into consideration to determine the floor space needed in each room.

Table 2-15 Size of Floor and Rooms of the Project Scope in Chipata Lv1H

A: OPD/Theatre GFL

Dept.	Room	Floor Area(m ²)	Size(m)
Medical Imaging	X-ray RM	27.00	4.50 × 6.00
	Ultrasonography RM.	12.60	3.00 × 4.20
	Dark RM.	5.40	3.00 × 1.80
	Radiographer's RM.	16.56	3.00 × 6.00
	Changing RM.	1.44	1.20 × 1.20
Subtotal		63.00	
General Outpatient	Consultation RM-1(TB)	18.00	3.00 × 6.00
	Waiting RM(TB)	34.20	6.00 × 6.00
	Treatment RM.	27.00	4.50 × 6.00
	Consultation RM-2 (Eye/ENT)	18.00	3.00 × 6.00
	Consultation RM-3(Gynae.)	18.00	3.00 × 6.00
	Consultation RM-4	18.00	3.00 × 6.00
	Consultation RM-5	18.00	3.00 × 6.00
	Consultation RM-6	18.00	3.00 × 6.00
	Consultation RM-7(Vital)	18.00	3.00 × 6.00
	Staff RM.	18.00	3.00 × 6.00
	Store	9.00	3.00 × 3.00
	Waiting Hall	232.00	39.00 × 6.00
EPS	3.80		
Subtotal		450.00	
Others	Staff WC-1,2	5.40	1.80 × 3.00
	Gas Cylinder Store, Stairs-1	18.00	3.00 × 6.00
	Corridor	3.60	1.20 × 3.00
	PS(Exterior)	3.15	
	Connecting Corridor-1,2	26.57	
	Exterior Corridor-1	112.50	45.00 × 2.50
Subtotal		169.21	
OPD/Theatre GFL Total		682.21	

A: OPD/Theatre 1FL

Dept.	Room	Floor Area(m ²)	Size(m)
Theatre	Operation Theatre	45.00	6.00 × 7.50
	Minor Operation Theatre	27.00	6.00 × 4.50
	Changing Hall	13.50	4.50 × 3.00
	Sterilisation RM.	27.00	3.00 × 9.00
	Suice RM.	31.50	3.00 × 10.50
	Theatre Hall	40.50	3.00 × 13.50
	Corridor-1	9.00	1.50 × 6.00
	Corridor-2	18.00	12.00 × 1.50
	Staff RM.-1	13.50	3.00 × 4.50
	Locker RM.-1	11.80	3.00 × 3.93
	Locker RM.-2	13.80	3.00 × 4.60
	Store-1	3.00	1.50 × 2.00
	Store-2	18.00	6.00 × 3.00
	Store-3	4.50	1.50 × 3.00
	SH-1	4.20	3.00 × 1.40
	SH-2	4.20	3.00 × 1.40
	WC-1,2,SK-1	6.00	1.50 × 4.00
Subtotal		290.50	
Surgery Ward	Ward (Surgery/C-section)	65.00	6.00 × 10.83
	Treatment RM.	9.00	3.00 × 3.00
	Doctor's RM.	11.70	3.00 × 3.90
	Suice RM	7.50	3.00 × 2.50
	Nurse Station	27.00	4.50 × 6.00
	Side Ward	16.50	3.00 × 5.50
	Staff RM.-2	12.00	3.00 × 4.00
	WC/SH-1	17.50	5.00 × 3.50
	WC/SH-2	6.00	2.00 × 3.00
	Staff WC-1-2	4.05	1.50 × 2.70
	SK-2	1.95	1.50 × 1.30
Pantry	16.00	4.50 × 3.56	
Store-4	4.50	1.50 × 3.00	
Corridor-3	15.30	7.65 × 2.00	
Subtotal		214.00	

Others	EPS	5.50	
	Mechanical Balcony, PS(Exterior)	28.35	42.00 × 0.68
	Stairs-1	18.00	3.00 × 6.00
	Connecting Corridor-1,2	26.57	
	Exterior Corridor-5,6,7	124.50	49.80 × 2.50
Subtotal		202.91	
OPD/Theatre 1FL Total		707.41	

B: OPD/Maternity GFL

Dept.	Room	Floor Area(m ²)	Size(m)	
General Outpatient	Consultation RM-1(Paed.)	17.50	3.00 × 5.83	
	Waiting RM(Paed.)	24.00	4.00 × 6.00	
	Consultation RM-2(Dental)	25.80	6.00 × 4.30	
	Dental X-ray	2.89	1.70 × 1.70	
	Registry-1	10.20	6.00 × 1.70	
	Store-1	2.21	1.30 × 1.70	
	Pharmacy	34.00	6.00 × 5.67	
	Sorting RM.	9.00	3.00 × 3.00	
	Dispenser	9.00	3.00 × 3.00	
	Cashier	9.00	3.00 × 3.00	
	Registry-2	18.00	6.00 × 3.00	
	Record-1	9.00	3.00 × 3.00	
	Record-2	18.00	6.00 × 3.00	
	Waiting Hall	183.00	30.50 × 6.00	
	Subtotal		371.60	
	Others	WC-1(M)	22.80	3.80 × 6.00
		WC-2(F)	20.37	4.85 × 4.20
SK		1.50	1.00 × 1.50	
Staff WC-1,2		6.97	3.17 × 2.20	
WCHC		5.40	2.70 × 2.00	
Store-2, Stairs-2		25.90	3.00 × 8.63	
EPS		4.00		
PS(Exterior)		2.70		
Connecting Corridor-1,2		63.49		
Exterior Corridor-2,3		81.46	6.00 × 13.58	
Subtotal		234.59		
OPD/Maternity GFL Total		606.19		

B: OPD/Maternity 1FL

Dept.	Room	Floor Area(m ²)	Size(m)
Maternity	Delivery RM.-1~4	72.00	12.00 × 6.00
	Staff RM.	24.00	6.00 × 4.00
	Doctor's RM.	12.00	3.00 × 4.00
	Treatment RM.	24.00	6.00 × 4.00
	Store	12.00	3.00 × 4.00
	Suice RM	13.80	3.00 × 4.60
	Ante-natal RM.(Labour RM.)	100.00	16.67 × 6.00
	Post-natal RM.-1,2	48.00	12.00 × 4.00
	Nurse Station	22.50	5.63 × 4.00
	Corridor-1~3	118.60	47.44 × 2.50
Premature RM.	14.40	3.60 × 4.00	
Subtotal		461.30	
Others	WC/SH	23.10	5.78 × 4.00
	Staff WC	2.80	2.00 × 1.40
	SK	1.40	1.00 × 1.40
	Mechanical Balcony-1,2,3	9.72	14.40 × 0.68
	Mechanical Balcony-4,5	4.00	2.00 × 2.00
	EPS	3.50	
	PS(Exterior)	2.70	
	Stairs-2	25.90	3.00 × 8.63
Connecting Corridor-1,2	63.49		
Exterior Corridor-8	18.00	6.00 × 3.00	
Subtotal		154.61	
OPD/Maternity 1FL Total		615.91	

Slope

Area	Floor Area(m ²)	Size(m)
Slope	152.55	61.02 × 2.5
Slope Total	152.55	

C: Mechanical Unit

Dept.	Room	Floor Area(m ²)	Size(m)
Mechanical Unit	Generator Room	30.00	5.00 × 6.00
	MDB Room	24.00	4.00 × 6.00
	Main Switch Room	30.00	5.00 × 6.00
	Blower Room	7.50	2.50 × 3.00
Subtotal		91.50	
Others	Exterior Corridor-4	131.30	9.50 × 13.82
	Subtotal	131.30	
Mechanical Unit Total		222.80	

D: Elevated Water Tank

Dept.	Room	Floor Area(m ²)	Size(m)
Elevated Water Tank	Elevated Water Tank	29.90	6.50 × 4.60
	Pump Room	42.00	7.00 × 6.00
	Water Reservoir	19.50	3.25 × 6.00
Elevated Water Tank Total		91.40	

Related Facilities

Building	Floor Area(m ²)	Size(m)
Septic Tank	46.02	8.85 × 5.20
Exterior Corridor	31.20	17.33 × 1.80
Related Facilities Total	77.22	

A	OPD/Theatre	1389.62
B	OPD/Maternity	1222.10
	Slope	152.55
C	Mechanical Unit	222.80
D	Elevated Water Tank	91.40
	Related Facilities	77.22
CHIPATA Total Floor		3155.69

2) Facility Structure (Function)

Facility scope in the Project is as follows:

Table 2-16 Facility Configurations of the Scope in Chipata Lv1H

Building/Floor		Outline
OPD/Theatre	GFL	OPD (General Outpatient [Male, Female, Eye/ENT, Vitals], TB) Medical Imaging (X-ray, Ultrasonography)
	1FL	Theatre (Theatre [1 room], Minor OP Theatre [1 room], Central Supply), Ward (Surgery [9 beds for Caesarean section])
OPD/Maternity	GFL	OPD (Paediatrics, Dental), Register, Cashier, Pharmacy
	1FL	Maternity (Delivery, Pre-natal, Post-natal Room)
Related Facilities		Mechanical Unit, Elevated Water Tank, Septic Tank, Soak Pit, Exterior Corridor
Medical Equipment		OPD, Ward, Theatre, Maternity, Medical Imaging Existing Facilities (Casualty, Ward (excl. Maternity Ward), Laboratory, Maintenance)

3) Floor Planning

For the building composition of entire facilities, outpatient/theatre department and outpatient/maternity department will be divided into 2 buildings in consideration of the coordination with departments in existing buildings. As developing area is located back from the front road, entrance combined with mechanical unit and waiting space faces main pathway to improve visibility and naturally draw to the buildings in the back. The buildings shall be 2-storied for effective land use. A slope facing courtyard will offer main access route to each department, as well as route of each service and evacuation. Elevators and other lifting equipment which require regular maintenance shall not be installed.

Outpatient department which expects many patients is placed on the ground floor and an outdoor waiting place shall be made in the courtyard to reduce congestion. Maternity department with a delivery room and operation department will be placed on the first floor, and surgery ward which mainly accommodates patients after Caesarean section shall be next to operation department. Operation department and maternity department will be in different buildings but connected by a corridor to facilitate transfer of patients from delivery room to operation department in case of Caesarean section.

Patients are expected to be transferred between OPD/Theatre building and casualty building (existing operation theatre building). They shall be connected through roofed exterior corridor to facilitate movement on wheelchairs and stretchers.

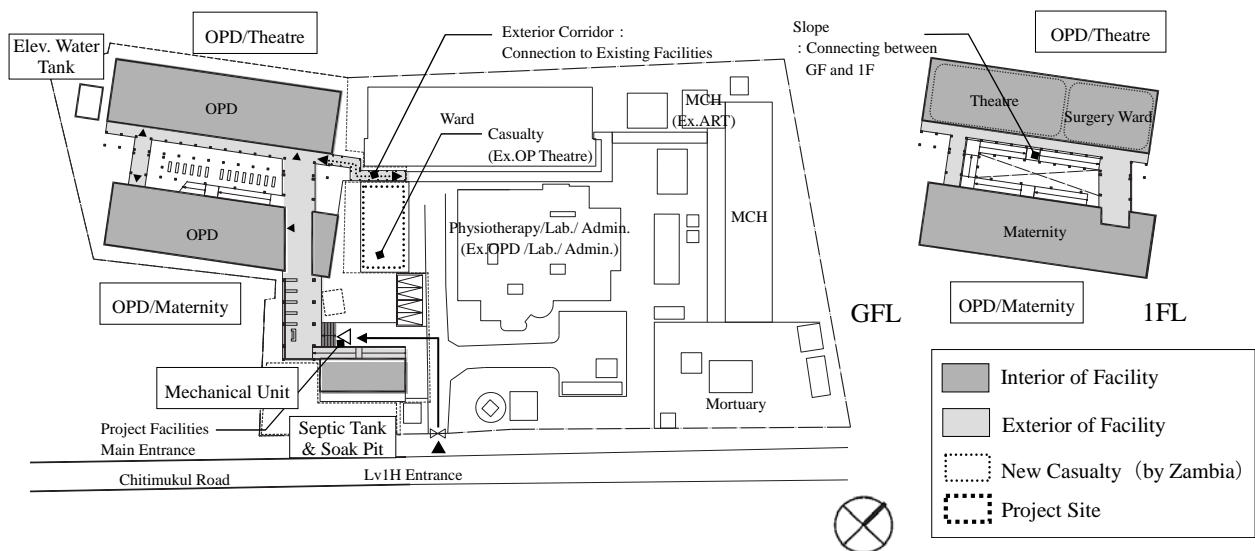


Figure 2-10 Chipata LvIH Facility Floor Planning

- Concept of OPD Design

Outpatient department consists of south block with a reception and pharmacy and north block with general outpatient and TB across the courtyard. These departments located in different buildings will be connected by a roofed exterior corridor so that outpatients can smoothly access to each room according to their needs.

A reception, cashier, pharmacy, dental room and paediatric room will be placed on the ground floor of the OPD/Maternity building which is close to the entrance. Paediatric consultation room will be placed independently without crossing other consultation room and have its own waiting room in order to prevent in-hospital infection. Main reception is placed near the entrance with high visibility to guide patients to the relevant department.

Outpatient department will be located on the north side of the ground floor of the OPD/Theatre building, and composed of consultation rooms for vitals, males, females, gynaecology room and eye/ENT room. The route of doctors and nurses will be at the window side penetrated all the treatment rooms to facilitate inter-departmental treatment.

Courtyard and exterior corridor facing the courtyard will be used as a waiting space for patients and their families in case many patients come. Toilets for patients will be collectively placed in a place which is exposed to the open air and can be accessed from the exterior corridor to maintain good hygiene and prevent odours.

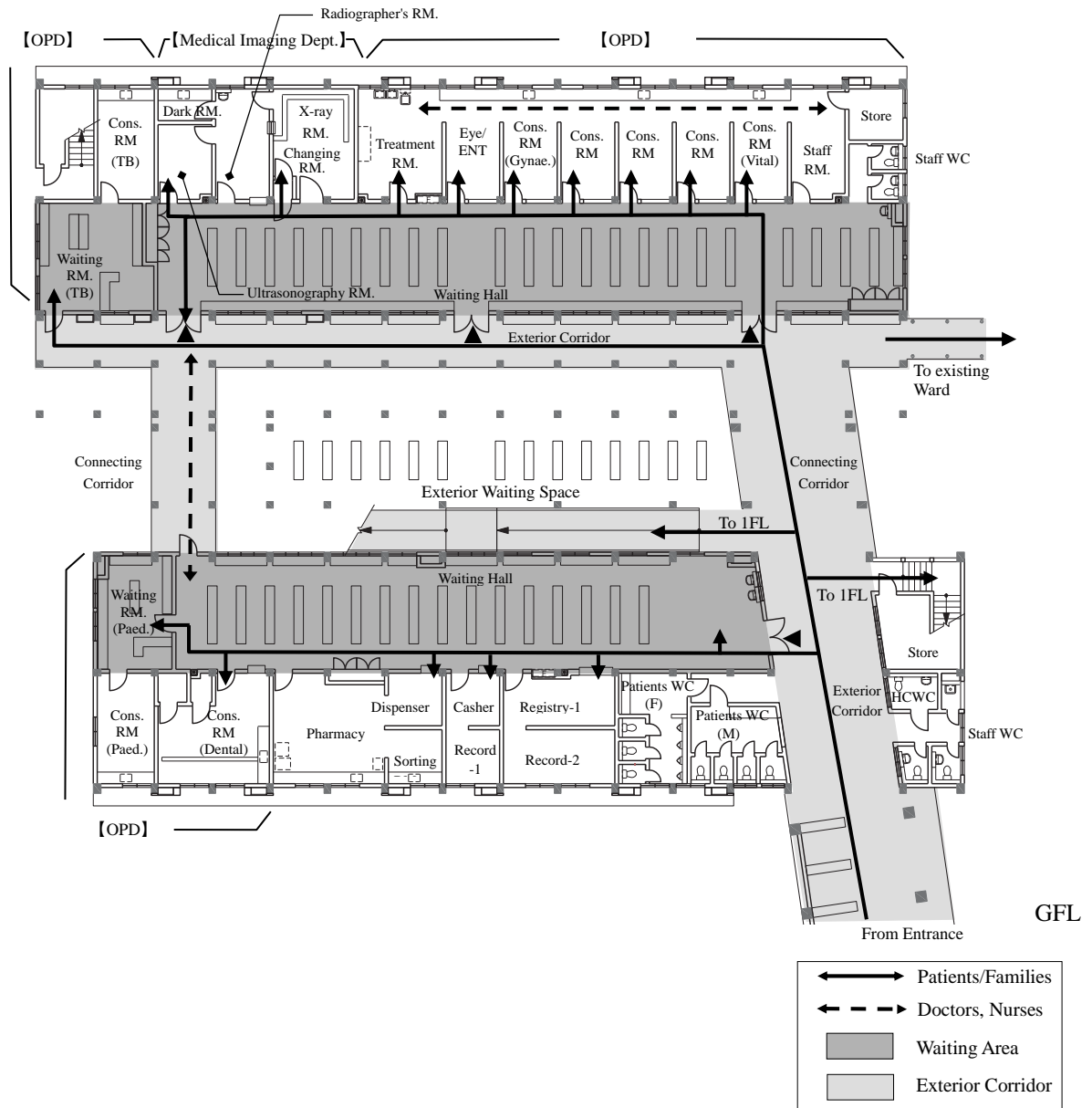


Figure 2-11 Chipata Lv1H Outpatient and Medical Imaging Department

• Concept of Medical Imaging Department Design

Medical imaging department conducts X-ray and ultrasound inspection. It will be placed next to outpatient department with an integrated waiting hall. Since the waiting hall is in front of both departments, route crossing and congestion are preventable. Patients will access directly from the waiting hall to changing room for X-ray and ultrasound room, separately from the staff's route.

• Concept of Maternity Department Design

Maternity department will be placed on the first floor of OPD/Maternity building. It includes a pre-natal room (labour room), delivery room, premature room, post-natal room, treatment room, sluice room, etc. In the delivery room, work route of doctors and nurses will be on the window side to facilitate movement between sluice and delivery room to prevent the crossing of equipment/materials before and after delivery. An exclusive connecting corridor is designed for quick transport of pregnant lady who need Caesarean section to the operation department. Pre-natal room and post-natal room will locate with an easy access to toilet and shower. Traffic to premature room shall pass in front of nurse station easier for nurses to pay careful attention on visiting families, and easy to observe next to each other.

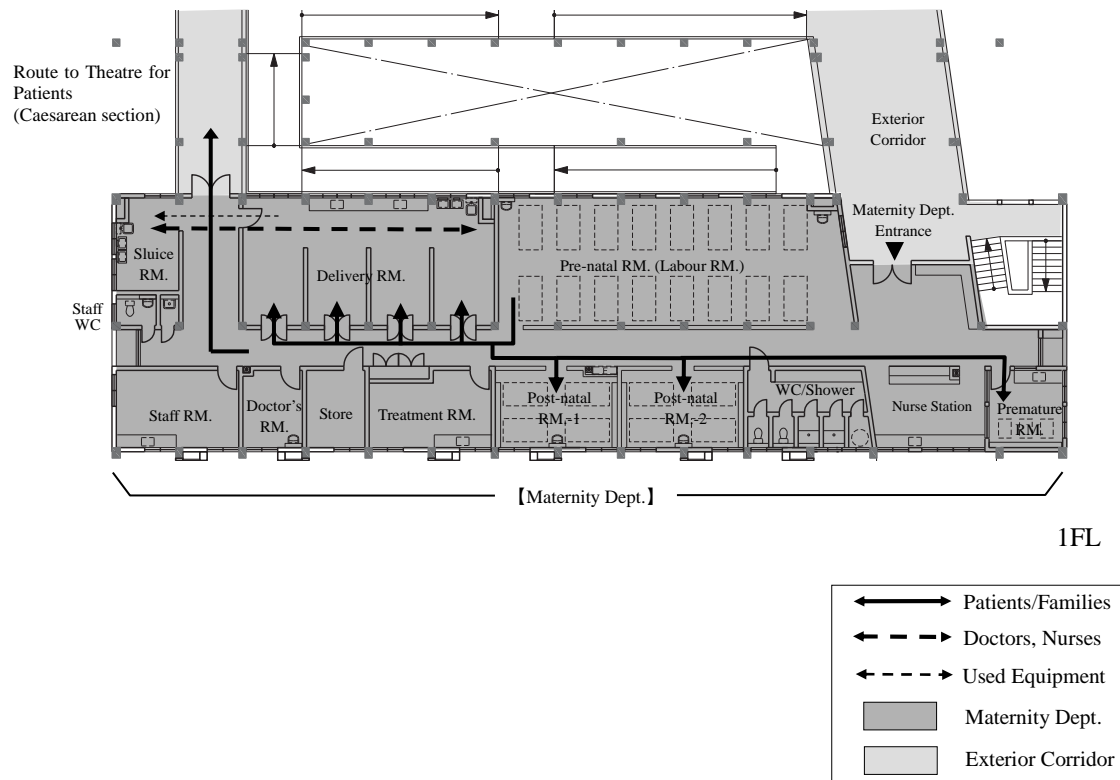


Figure 2-12 Chipata Lv1H Maternity Department

• Concept of Operation Department and Surgery Ward Design

Operation department will be located where easy access from the delivery room on the first floor of OPD/Maternity building and easy transfer of post-operative patients to surgery ward, in order to strengthen their coordination.

Operation department includes operation theatre, minor operation theatre, sluice room, sterilization room, and locker room. Dirty zone and clean zone are clearly separated in order to prevent infectious diseases. Ceiling height is limited to 2.8m to reduce the air conditioning load, except for the operation theatre which requires height (3.0m high).

Ward shown below is exclusively for surgical patients mainly after Caesarean section. It is located next to operation department, which minimizes route of transfer of post-operative patients.

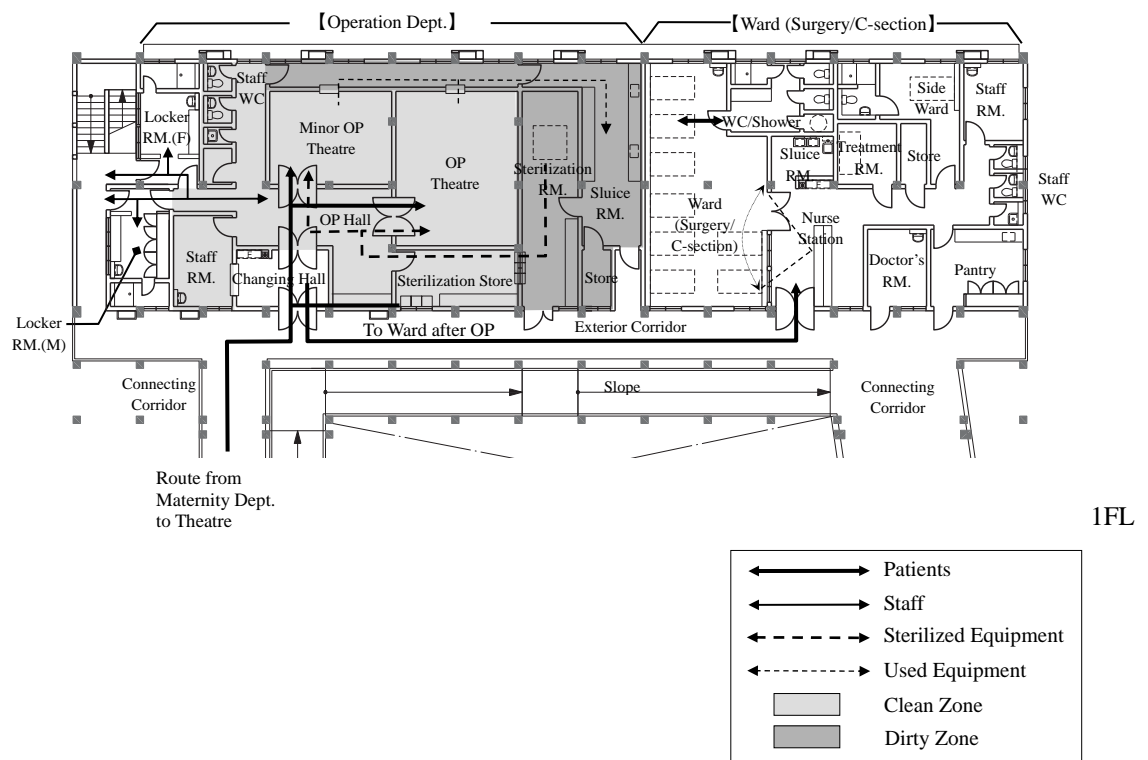


Figure 2-13 Chipata Lv1H Operation Department and Surgery Ward

(4) Facility Plan of Kanyama Level 1 Hospital (Lv1H)

1) Required Floor Space

In the similar manner as at Chipata Lv1H, based on the number of necessary beds in each category and the number of rooms calculated above, the total required floor space shall be calculated through architectural plan. Size of each room is determined based on current state of existing facilities, with the Standard Plan of level 1 hospitals by the MOH and floor space of medical facilities in Japan (Architectural Design Data Corpus by the Architectural Institute of Japan, etc.) as references.

The layout of medical equipment planned in each room and number of patients/medical staff are comprehensively taken into consideration to determine the floor space needed in each room.

Table 2-17 Size of Floor and Rooms of the Project Scope in Kanyama Lv1H

A: Theatre/Laboratory GFL

Dept.	Room	Floor Area(m ²)	Size(m)
Theatre	Operation RM.	40.52	5.55 × 7.30
	Minor Operation RM.	29.03	6.75 × 4.30
	Changing Hall	16.80	4.20 × 4.00
	Operation Hall	37.80	8.4 × 4.50
	Sluice RM.	20.81	2.85 × 7.30
	Sterilisation RM.	23.10	4.20 × 5.50
	Staff RM.-1	16.80	4.20 × 4.00
	Locker RM.-1	9.26	2.85 × 3.25
	Locker RM.-2	13.47	2.40 × 5.61
	SH-1	3.56	2.85 × 1.25
	SH-2	3.72	2.40 × 1.55
	WC-1.2	6.12	1.80 × 3.40
	SK-1	1.89	1.80 × 1.05
	Storage-1	23.10	4.20 × 5.50
	Storage-2	11.40	2.85 × 4.00
	Corridor-2	9.90	1.65 × 6.00
	Corridor-3	11.48	1.35 × 8.50
Corridor-4	25.76	15.15 × 1.70	
Subtotal		304.50	
Maternity	Ante-natal RM.	151.20	12.60 × 12.00
	Nurse Station	5.99	2.55 × 2.35
	Staff RM.-2	9.45	4.20 × 2.25
	Doctor's RM.	10.31	2.75 × 3.75
	Linen RM.	4.21	2.55 × 1.65
	Sluice RM	5.61	2.55 × 2.20
	Storage-3	4.73	2.10 × 2.25
	Storage-4	3.41	1.45 × 2.35
	Corridor-5,6	18.23	× 1.40
	WC/SH	34.20	5.70 × 6.00
Staff WC	3.41	1.45 × 2.35	
Subtotal		250.74	
Others	Corridor-1,slope-3	73.50	21.00 × 3.50
	EPS	1.26	
	PS(Exterior)	1.098	
Subtotal		75.85	
Theatre/Laboratory GFL Total		631.09	

A: Theatre/Laboratory 1FL

Dept.	Room	Floor Area(m ²)	Size(m)
Medical Imaging	X-ray RM., Changing RM.	34.80	5.70 × 6.11
	Ultrasonography RM.	18.90	2.70 × 7.00
	Dark RM.	6.30	2.00 × 3.15
	Radiographer's RM.	18.90	2.70 × 7.00
Subtotal		78.90	
Clinical Laboratory	Lab.-1,2	63.90	8.40 × 7.61
	Lab.-3	18.00	3.00 × 6.00
	Sterilisation RM.	7.20	2.40 × 3.00
	Sluice RM.	7.20	2.40 × 3.00
	Registry/Collection RM.	17.46	4.60 × 4.08
	WC (Urine)	4.32	2.40 × 1.80
	Staff RM.	6.84	2.40 × 2.85
Storage	7.26	2.20 × 3.30	
Corridor	9.24	1.40 × 6.60	
Subtotal		141.42	
General Outpatient	Consultation RM-1(Paed.)	19.20	3.20 × 6.00
	Waiting RM-1 (Paed.)	54.87	6.20 × 8.85
	Consultation RM-2 (TB)	13.62	4.20 × 3.24
	Waiting RM-2 (TB)	34.80	5.70 × 6.11
	Record	6.93	2.20 × 3.15
Subtotal		129.42	

Others	Exterior Waiting Hall	163.82	20.10 × 8.15
	WC-1,2,SK	53.15	5.00 × 10.63
	Staff WC-1,2	5.10	1.70 × 3.00
	WCHC-1.2	10.00	5.00 × 2.00
	Exterior Corridor-1	19.11	1.40 × 13.65
	Mechanical Balcony-1-7	27.77	
	EPS	1.32	
	PS(Exterior)	1.098	
Subtotal		281.35	
Theatre/Laboratory 1FL Total		631.09	

B: OPD/Ward GFL

Dept.	Room	Floor Area(m ²)	Size(m)
Ward	Ward-1 (Surgery/C-Section)	89.10	9.90 × 9.00
	Treatment RM.-1	14.40	4.00 × 3.60
	Doctor's RM.-1	10.26	2.85 × 3.60
	Nurse Station-1	13.14	3.65 × 3.60
	Side Ward-1	10.80	3.00 × 3.60
	Sluice RM	5.25	2.10 × 2.50
	Staff RM.-1	10.26	2.85 × 3.60
	Staff WC-1,	6.27	1.90 × 3.30
	WC/SH-1	5.94	1.65 × 3.60
	WC/SH-4/SK-1	24.48	4.00 × 6.12
	Corridor-1	39.60	16.50 × 2.40
	Staff RM.-4	12.3	4.10 × 3.00
	Linen RM.	13.95	3.30 × 4.23
	Storage-1	8.25	2.75 × 3.00
	Ward-2 (Medical/Female)	143.10	15.90 × 9.00
	Treatment RM.-2	13.86	3.85 × 3.60
	Doctor's RM.-2	10.80	3.00 × 3.60
	Nurse Station-2	12.78	3.55 × 3.60
	Side Ward-2	11.52	3.20 × 3.60
	Staff RM.-2	9.90	2.75 × 3.60
	WC/SH-2	5.94	1.65 × 3.60
	WC/SH-5	28.50	3.60 × 7.92
	SK-2	5.10	3.00 × 1.70
	Corridor-2	34.56	14.40 × 2.40
	Ward-3 (Medical/Male)	143.10	15.90 × 9.00
	Treatment RM.-3	13.86	3.85 × 3.60
	Doctor's RM.-3	10.80	3.00 × 3.60
Nurse Station-3, Staff WC-3	12.96	3.60 × 3.60	
Side Ward-3	10.80	3.00 × 3.60	
Staff RM.-3	12.00	3.00 × 4.00	
WC/SH-3	5.58	1.55 × 3.60	
WC/SH-6	28.50	3.60 × 7.92	
Corridor-3	45.36	18.90 × 2.40	
Pantry	18.72	5.20 × 3.60	
Corridor-4	49.5	3 × 16.5	
Corridor-5	28.08	3 × 9.36	
Subtotal		919.32	
Others	Registry	48.60	9.00 × 5.40
	Gas Cylinder Store	15.00	3.00 × 5.00
	Stairs-1	15.75	3.00 × 5.25
	EPS	5.28	
	PS(Exterior)	3.45	
	Exterior Corridor-1	171.00	57.00 × 3.00
Exterior Corridor-2	27.00	3.00 × 9.00	
Subtotal		286.07	
OPD/Ward GFL Total		1205.39	

B: OPD/Ward 1FL

Dept.	Room	Floor Area(m ²)	Size(m)
General Outpatient	Waiting Hall-1	198.00	24.00 × 8.25
	Waiting Hall-2	345.60	39.00 × 8.86
	Registry/Record-1	34.20	5.70 × 6.00
	Cashier/Record-2	18.00	3.00 × 6.00
	Dispenser/Sorting RM.	18.00	3.00 × 6.00
	Pharmacy	36.00	6.00 × 6.00
	Consultation RM-1 (Vital)	18.00	3.00 × 6.00
	Consultation RM-2	18.00	3.00 × 6.00
	Consultation RM-3	18.00	3.00 × 6.00
	Consultation RM-4	18.00	3.00 × 6.00
	Consultation RM-5	18.00	3.00 × 6.00
	Consultation RM-6(Gynac.)	18.00	3.00 × 6.00
	Consultation RM-7 (Eye/ENT)	18.00	3.00 × 6.00
	Consultation RM-8(Dental)	36.00	6.00 × 6.00
	Dental X-ray/Storage-2		
	Treatment RM.	36.00	6.00 × 6.00
	Staff RM.-1	18.00	3.00 × 6.00
Storage-1	16.71	3.00 × 5.57	
Subtotal		882.51	
Others	EPS	3.09	
	PS(Exterior)	4.15	
	WC-1-2/SK	36.00	6.00 × 6.00
	Exterior Corridor-1	117.00	39.00 × 3.00
	Exterior Corridor-2	27.00	3.00 × 9.00
	Stairs-1	15.75	3.00 × 5.25
	Stairs-2	14.40	1.60 × 9.00
	Mechanical Balcony-1,2	5.40	6.00 × 0.90
Slope	146.40		
Subtotal		369.18	
OPD/Ward 1FL Total		1251.69	

C: Mechanical Unit

Dept.	Room	Floor Area(m ²)	Size(m)
Mechanical Unit	Generator Room	30.00	6.00 × 5.00
	MDB Room	24.00	6.00 × 4.00
	Main Switch Room	30.00	6.00 × 5.00
	Blower Room	9.00	3.00 × 3.00
Mechanical Unit Total		93.00	

D: Elevated Water Tank

Dept.	Room	Floor Area(m ²)	Size(m)
Elevated Water Tank	Elevated Water Tank	29.90	4.60 × 6.50
	Pump Room	42.00	6.00 × 7.00
	Water Reservoir	24.00	6.00 × 4.00
Elevated Water Tank Total		95.90	

Related facilities

Building	Floor Area(m ²)	Size(m)
Septic Tank	60.48	10.80 × 5.60
Exterior Corridor	98.20	54.56 × 1.80
Related Facilities Total		158.68

A	Theatre/Laboratory	1262.18
B	OPD/Ward	2457.08
C	Mechanical Unit	93.00
D	Elevated Water Tank	95.90
	Related Facilities	158.68
KANYAMA Total Floor		4066.84

2) Facility Structure (Function)

Facility scope in the Project is as follows:

Table 2-18 Facility Configurations of the Scope in Kanyama Lv1H

Building/Floor		Outline
Theatre/Laboratory	GFL	Theatre (Theatre [1 room], 1 Theatre [1 room], Central Supply) Maternity (Pre-natal Room)
	1FL	Medical Imaging (X-ray Room, Ultrasonography Room) Clinical Laboratory (Laboratory, Collection Room, Sluice Room, Sterilisation Room) OPD (Paediatrics, TB)
OPD/Ward	GFL	Ward (Surgery [13 beds for Caesarean section], Medical [22 beds for Female, 22 beds for Male])
	1FL	OPD (General Outpatient [Male, Female, Gynaecology, Vitals], Eye/ENT, Dental), Register, Cashier, Pharmacy
Related Facilities		Mechanical Unit, Elevated Water Tank, Septic Tank, Soak Pit, Neutralisation Tank, Exterior Corridor
Medical Equipment		OPD, Medical Imaging, Clinical Laboratory, Theatre, Maternity Ward, Surgery Ward, Medical Ward Existing Facilities (Casualty, Paediatrics Ward, Delivery, Maintenance)

3) Floor Planning

In the similar manner as at Chipata Lv1H, building composition of new facility will be functionally divided to two: operation, maternity, medical imaging, clinical laboratory department-building, and ward, outpatient department-building. Those buildings are designed 2-storied for effective land use. A slope shall be installed for vertical traffic, but without elevator and other equipment which would require regular maintenance.

Maternity and operation departments will locate facing the existing delivery building and casualty building (existing operation theatre building), and have exclusive entrance on the ground floor in order to facilitate access. They will be connected by a roofed exterior corridor to facilitate the movement on wheelchairs and stretchers. Ward will be placed on the ground floor of OPD/Ward building in consideration of the coordination with existing ward building and new operation theatre. Outpatient department will be placed on the first floor of OPD/Ward building, and a slope to the first floor will be installed in front of the OPD/Ward building with high visibility to facilitate patients' access as main their route, service/evacuation routes and a space for equipment maintenance. The clinical laboratory and medical imaging departments will be on the first floor of Theatre/Laboratory building.

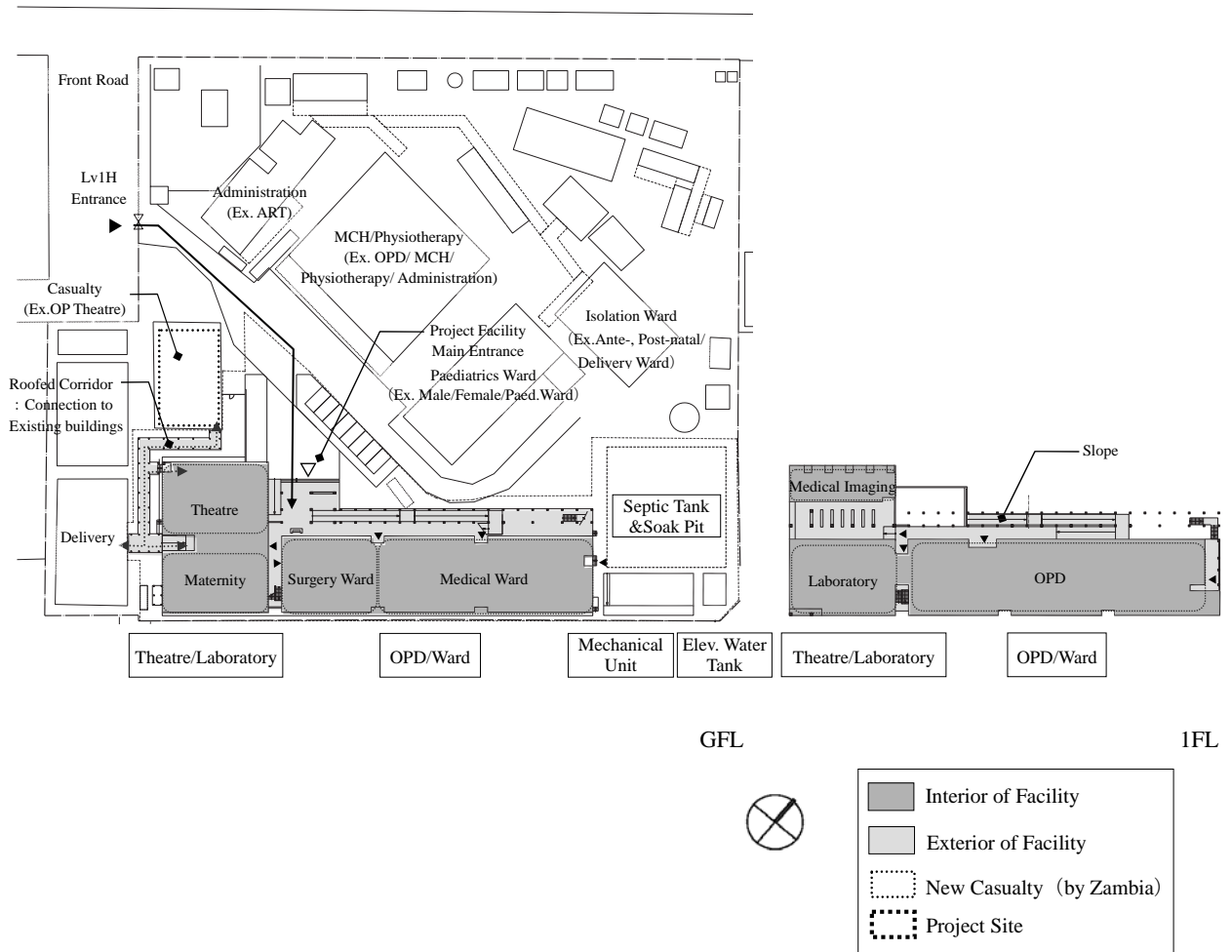


Figure 2-14 Kanyama Lv1H Facility Floor Planning

• Concept of Outpatient Department Design

Outpatient department contains two waiting spaces, one for reception, cashier, and pharmacy and the other for consultation. Two waiting spaces are connected each other by straight hallway from east to west. Two waiting space in each area clears two different functions in order to integrate administration and medical activities respectively.

Outpatient department consists of consultation rooms for males, females, gynaecology, paediatric, eye/ENT, dental, vitals and TB. Consultation rooms are designed in a row penetrated by route of doctors and nurses at the window side to enable smooth inter-departmental cooperation. Paediatric consultation room will be placed independently without crossing with other departments and have its own waiting space in order to prevent in-hospital infection. TB consultation room will be also placed independently on the first floor of the Theatre/Laboratory building to prevent in-hospital infection.

Toilets for patients will be placed collectively at both ends of the building to maintain good hygiene and prevent odours.

• Concept of Medical Imaging Department Design

Medical imaging department conducts X-ray and ultrasonography. X-ray room is placed next to TB consultation room considering their coordination. Patients can access directly from external waiting hall to X-ray and ultrasonography rooms, separately from the staff's route.

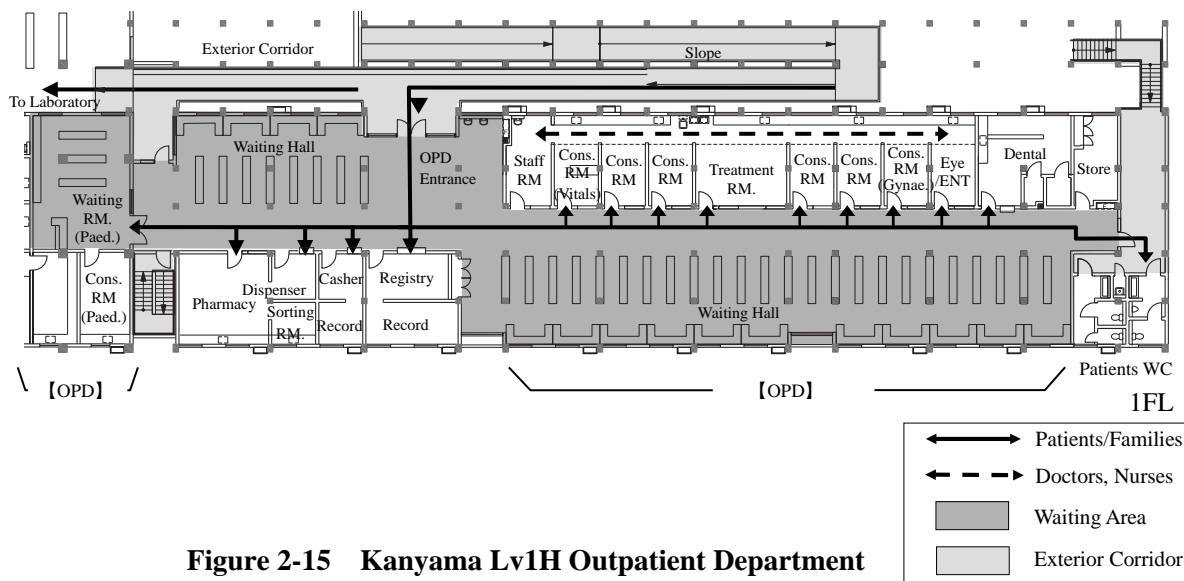


Figure 2-15 Kanyama Lv1H Outpatient Department



Figure 2-16 Kanyama Lv1H Medical Imaging and Outpatient Department (TB)

• Concept of Operation Department Design

Operation department will locate where facilitates the access from existing delivery building, casualty building (existing operation theatre building), and surgery ward for transfer of post-operative patients, which strengthens its coordination with other departments.

Operation department includes operation theatre, minor operation theatre, sluice room, sterilization room, sterilization storage and changing room. Clean and dirty zone are clearly divided to prevent infectious diseases. Ceiling height is limited to 2.8m to reduce the air conditioning load, except for the operation theatre which requires height (3.0m high).

• Concept of Maternity Department Design

Exclusive ward for pregnant women before delivery is the scope of the Project. Existing building will be used for normal labour and post-natal recovery room.

Maternity ward will be placed on the ground floor of the Theatre/Laboratory building to facilitate traffic between existing delivery building and new operation department. Beds in pre-natal room will be observable from nurse station. Toilets and shower for patients shall be exposed to the open air.

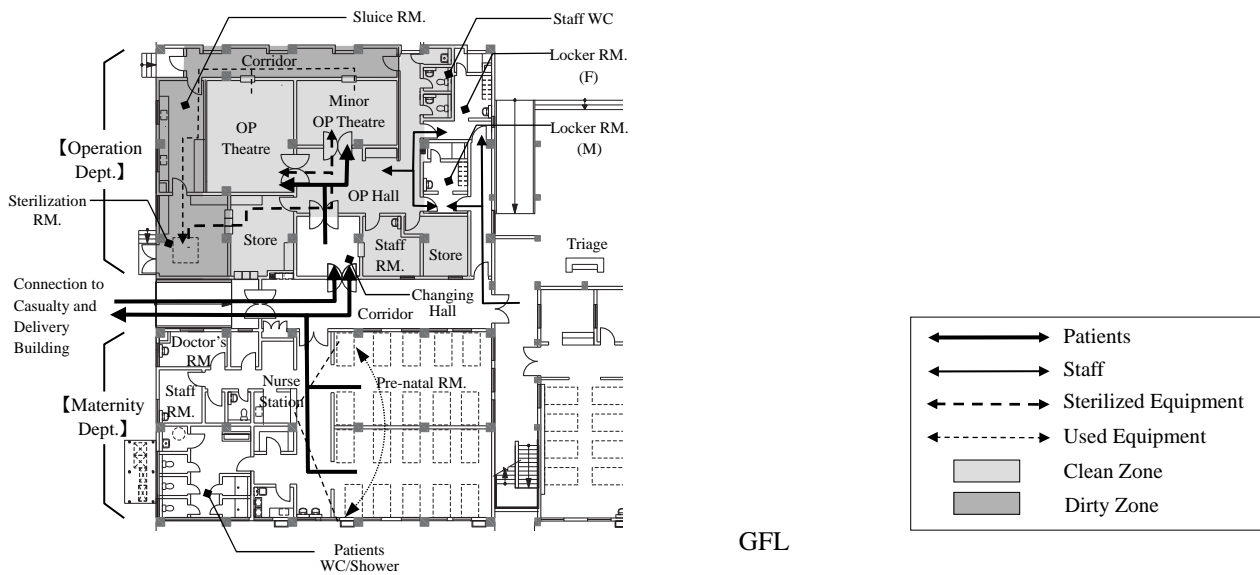


Figure 2-17 Kanyama Lv1H Maternity Department and Operation Department

• Concept of Ward Design

Ward is designed on the ground floor of OPD/Ward building, and surgery ward and medical ward (male and female units) will be placed in a row. Bed rooms shall be southern side, while the other rooms such as the nurse station shall be gathered on the northern side. Their placement across the middle corridor will make patients' daily traffic compact and facilitate nursing activities. Entrances are designed in front of the building to enable the patients' family to access directly to each nursing unit from outside. Those doors improve the indoor environment by ameliorating corridor ventilation.

Surgery ward will mainly accommodate patients after Caesarean section, so locate near operation department in order to shorten transfer route of post-operative patients.

Common areas, such as toilets and showers in each ward, will be collectively placed and exposed to the open air to maintain good hygiene to prevent odours.

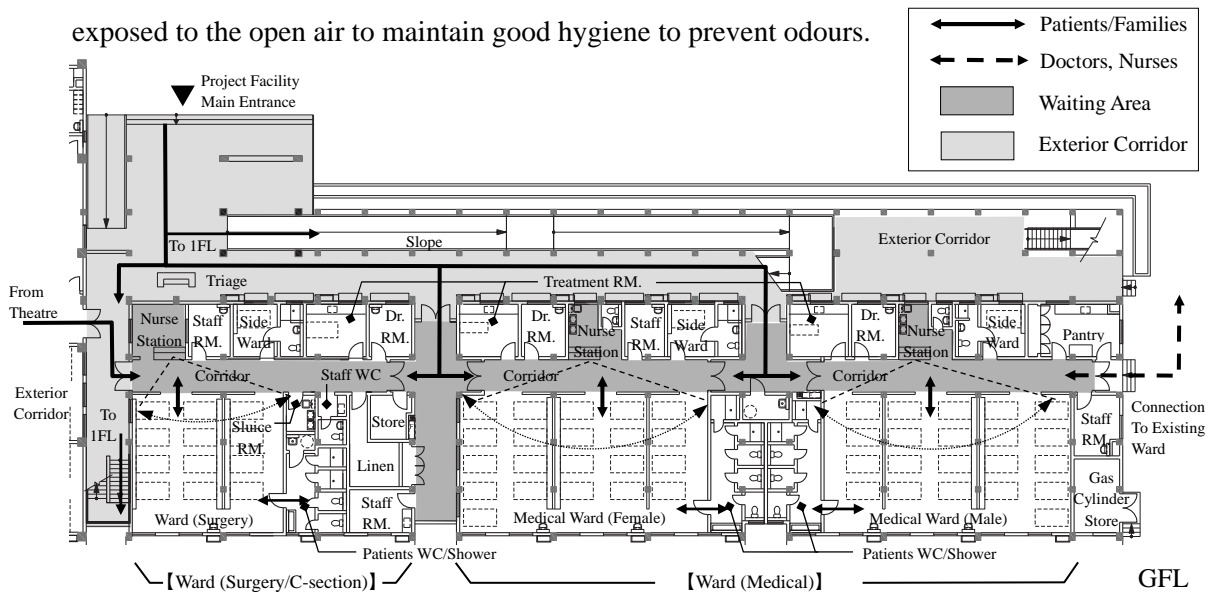


Figure 2-18 Kanyama Lv1H Ward Department

• Concept of Clinical Laboratory Design

Clinical laboratory department which conducts physiological/pathological examination consists of a collection room, toilet for urine test, laboratory, sluice room, and sterilization room. Staff will access to each room from middle corridor, and patients will access through department reception and sample collection room from outdoor waiting space. Staff traffic shall be completely separated from above mentioned patients' traffic. Lab-3 will be exclusively for TB examination and placed independent from other rooms to prevent infection.

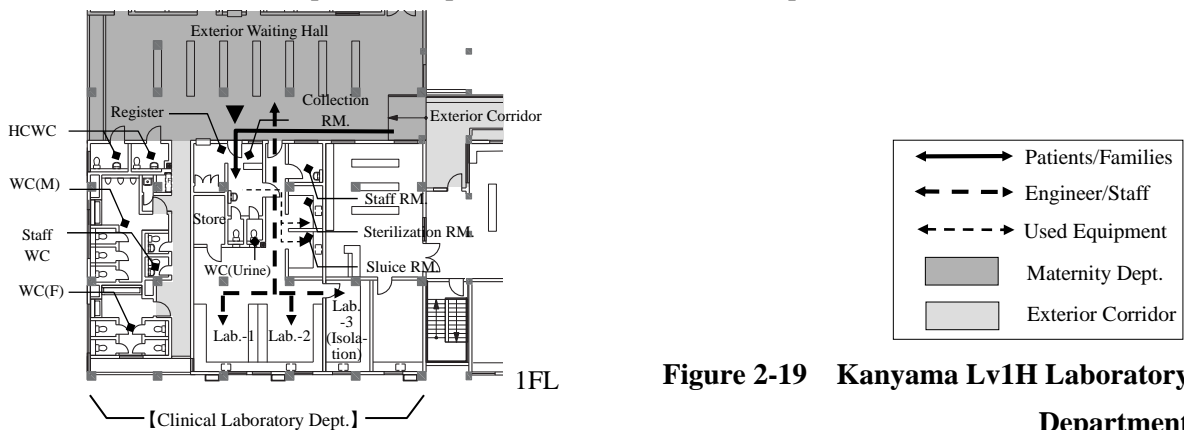


Figure 2-19 Kanyama Lv1H Laboratory Department

(5) Facility Plan of Chawama Level 1 Hospital (Lv1H)

1) Required Floor Space

In the similar manner as at Chipata Lv1H and Kanyama Lv1H, based on the number of necessary beds in each category and the number of rooms calculated above, the total required floor space shall be calculated through architectural plan. Size of each room is determined based on current state of existing facilities, with the Standard Plan of level 1 hospitals by the MOH and floor space of medical facilities in Japan (Architectural Design Data Corpus by the Architectural Institute of Japan, etc.) as references.

The layout of medical equipment planned in each room and number of patients/medical staff are comprehensively taken into consideration to determine the floor space needed in each room.

Table 2-19 Size of Floor and Rooms of the Project Scope in Chawama Lv1H

A: OPD/Theatre GFL

Dept.	Room	Floor Area(m ²)	Size(m)	
Theatre	Operation Theatre	45.00	6.00 × 7.50	
	Minor Operation Theatre	27.00	6.00 × 4.50	
	Changing Hall	12.60	4.20 × 3.00	
	Operation Hall	27.00	3.00 × 9.00	
	Suice RM.	21.60	6.00 × 3.60	
	Sterilisation RM.	35.40	3.00 × 11.80	
	Staff RM.-3	14.40	4.80 × 3.00	
	Locker RM.-3	11.40	3.00 × 3.80	
	Locker RM.-4	11.40	3.00 × 3.80	
	SH-1	4.42	1.70 × 2.60	
	SH-2	4.20	3.00 × 1.40	
	WC-1,2	4.29	1.65 × 2.60	
	SK-3	1.65	1.65 × 1.00	
	Store-4	18.00	6.00 × 3.00	
	Corridor-3	16.64	1.35 × 12.33	
	Corridor-4	18.00	12.00 × 1.50	
	Subtotal		273.00	
	Ward	Ward-1(Surgery/C-Section)	48.00	6.00 × 8.00
Treatment RM.		17.25	5.75 × 3.00	
Doctor's RM.		17.25	5.75 × 3.00	
Nurse Station		39.45	5.05 × 7.81	
Side Ward		11.80	4.54 × 2.60	
Pantry		12.00	3.00 × 4.00	
Staff RM.-2		12.00	3.00 × 4.00	
Suice RM.		7.80	2.60 × 3.00	
Storage-3		9.45	3.15 × 3.00	
WC/SH-1,SK-2		19.35	4.30 × 4.50	
WC/SH-2		6.65	3.50 × 1.90	
Corridor-1	9.00	6.00 × 1.50		
Subtotal		210.00		
Others	Exterior Corridor-3	14.25	4.75 × 3.00	
	Corridor-2	66.75	22.25 × 3.00	
	EPS	3		
	PS(Exterior)	3		
	Mechanical Balcony-2	18.00	1.20 × 15.00	
Subtotal		105.00		
OPD/Theatre GFL Total		588.00		

A: OPD/Theatre 1FL

Dept.	Room	Floor Area(m ²)	Size(m)
General Outpatient	Waiting Hall	279.86	31.10 × 9.00
	Registry-2/Record-1	37.80	6.30 × 6.00
	Cashier/Record-2	18.00	3.00 × 6.00
	Dispenser/Sorting RM.	18.90	6.30 × 3.00
	Pharmacy	37.80	6.30 × 6.00
	Consultation RM-3(Vital)	18.00	3.00 × 6.00
	Consultation RM-4	18.00	3.00 × 6.00
	Consultation RM-5	18.00	3.00 × 6.00
	Consultation RM-6	18.00	3.00 × 6.00
	Consultation RM-8(Gyanae.)	18.00	3.00 × 6.00
	Consultation RM-8(Eye/ENT)	18.00	3.00 × 6.00
	Treatment RM.	36.00	6.00 × 6.00
	Staff RM.	18.00	3.00 × 6.00
	Storage-3	9.00	3.00 × 3.00
Subtotal		563.36	
Others	EPS	3.64	
	PS(Exterior)	3	
	Exterior Stairs	9.20	1.25 × 7.36
	Mechanical Balcony-2	18.00	1.20 × 15.00
Subtotal		33.84	
OPD/Theatre 1FL Total		597.20	

B: OPD/Physiotherapy GFL

Dept.	Room	Floor Area(m ²)	Size(m)
General Outpatient	Consultation RM.-1(TB)	14.40	4.80 × 3.00
	Waiting RM.(TB)	36.00	6.00 × 6.00
Subtotal		50.40	
Physiotherapy	Physiotherapy RM.	97.20	10.80 × 9.00
	Registry	13.50	4.50 × 3.00
	Locker RM.-1,2	10.50	3.50 × 3.00
	Staff RM.-1	9.00	3.00 × 3.00
	Store-1	5.40	1.80 × 3.00
Store-2	6.30	2.10 × 3.00	
Subtotal		141.90	
Others	WC-1	11.40	4.75 × 2.40
	WC-2	12.64	4.51 × 2.80
	HCWC-1	4.94	2.60 × 1.90
	HCWC-2	4.75	2.50 × 1.90
	Staff WC-1,2	6.51	1.55 × 4.20
	SK-1	1.68	1.05 × 1.60
	EPS	2.10	
	Exterior Corridor-1	78.30	3.00 × 26.10
	Exterior Corridor-2/Triage	76.88	4.50 × 17.08
	Stairs-1 below	9.00	1.50 × 6.00
	Stairs-2	9.90	6.60 × 1.50
Stairs-3,Slope-2	0.00		
Mechanical Balcony-1	32.40	1.20 × 27.00	
Subtotal		250.50	
OPD/Physiotherapy GFL Total		442.80	

B: OPD/Physiotherapy 1FL

Dept.	Room	Floor Area(m ²)	Size(m)
General Outpatient	Cons. RM-1(Dental), Registry-1	27.90	9.30 × 3.00
	Dental X-ray/Store-2	4.50	1.50 × 3.00
	Cons. RM-2(Paed.)	18.90	6.30 × 3.00
	Waiting RM(Paed.)	38.30	4.50 × 8.51
Subtotal		89.60	
Medical Imaging	Exterior Waiting Hall	64.80	10.80 × 6.00
	X-ray RM., Changing RM.	24.60	4.10 × 6.00
	Ultrasonography RM.	10.26	2.70 × 3.80
	Dark RM.	5.94	2.70 × 2.20
	Radiographer's RM.	17.70	4.00 × 4.43
	Store-1	6.30	2.10 × 3.00
Subtotal		129.60	
Others	WC-1	23.25	5.34 × 4.35
	WC-2	25.14	5.41 × 4.65
	Staff WC-1	4.16	1.60 × 2.60
	Staff WC-2	4.16	2.60 × 1.60
	EPS	2.20	
	Exterior Corridor-1	54.00	3.00 × 18.00
	Exterior Corridor-2	49.50	8.25 × 6.00
	Stairs-1	18.00	3.00 × 6.00
	Stairs-2	18.00	6.00 × 3.00
	Mechanical Balcony-1	32.40	1.20 × 27.00
Subtotal		230.80	
OPD/Physiotherapy 1FL Total		450.00	

Slope

Area	Floor Area(m ²)	Size(m)
Slope	184.30	61.43 × 3
Slope Total	184.30	

C: Mechanical Unit

Dept.	Room	Floor Area(m ²)	Size(m)
Mechanical Unit	Generator Room	30.00	5.00 × 6.00
	MDB Room	24.00	4.00 × 6.00
	Main Switch Room	30.00	5.00 × 6.00
	Blower Room	9.00	3.00 × 3.00
Mechanical Unit Total		93.00	

D: Elevated Water Tank

Dept.	Room	Floor Area(m ²)	Size(m)
Elevated Water Tank	Elevated Water Tank	29.90	6.50 × 4.60
	Pump Room	42.00	7.00 × 6.00
	Water Reservoir	27.00	4.50 × 6.00
Elevated Water Tank Total		98.90	

Related Facilities

Building	Floor Area(m ²)	Size(m)
Septic tank	36.57	10.30 × 3.55
Exterior Corridor	190.50	### × 1.80
Related Facilities Total	227.07	

A	OPD/Theatre	1185.20
B	OPD/Physiotherapy	892.80
	Slope	184.30
C	Mechanical Unit	93.00
D	Elevated Water Tank	98.90
	Related Facilities	227.07
CHAWAMA Total Floor		2681.27

2) Facility Structure (Function)

Facility scope in the Project is as follows:

Table 2-20 Facility Configurations of the Scope in Chawama Lv1H

Building/Floor		Outline
OPD/Theatre	GFL	Theatre (OP Theatre [1 room], Minor OP Theatre [1 room], Central Supply), Ward (Surgery [8 beds for Caesarean section])
	1FL	OPD (General Outpatient [Male, Female, Gynaecology, Vitals], Eye/ENT), Register, Cashier, Pharmacy
OPD/Physiotherapy	GFL	Physiotherapy (Physiotherapy Room) OPD (TB)
	1FL	OPD (Paediatrics, Dental) Medical Imaging (X-ray Room, Ultrasonography Room.)
Related Facilities		Mechanical Unit, Elevated Water Tank, Septic Tank, Soak Pit, Exterior Corridor
Medical Equipment		OPD, Theatre, Physiotherapy, Medical Imaging, Ward, Existing Facilities (Medical Ward, Maternity, Casualty, Laboratory, Maintenance)

3) Floor Planning

For building composition of the planned facility, outpatient/operating departments and outpatient/physiotherapy departments will be divided into two separate blocks, in a similar manner as at Chipata Lv1H and Kanyama Lv1H. The buildings are designed two stories for effective land use, and a slope will be installed in front of them. Elevators and other lifting equipment which would require regular maintenance shall not be installed.

As patient's transfer is expected between existing delivery building and casualty building (existing operation theatre building), operation department will be placed on the first floor with an exclusive entrance near the delivery building and new casualty building. They will be connected by a roofed external corridor to facilitate movement on wheelchairs and stretchers. Surgery ward will be on the ground floor of OPD/Theatre building in consideration of coordination with existing ward building and new operation department. Outpatient and medical imaging departments will be placed on the first floor, and a slope to the first floor will be installed in front of the OPD/Theatre building with high visibility. It will be the main access route for patients, service/evacuation route, and a space for equipment maintenance. Physiotherapy department will be placed near entrance on the ground floor to facilitate access of disable patients.

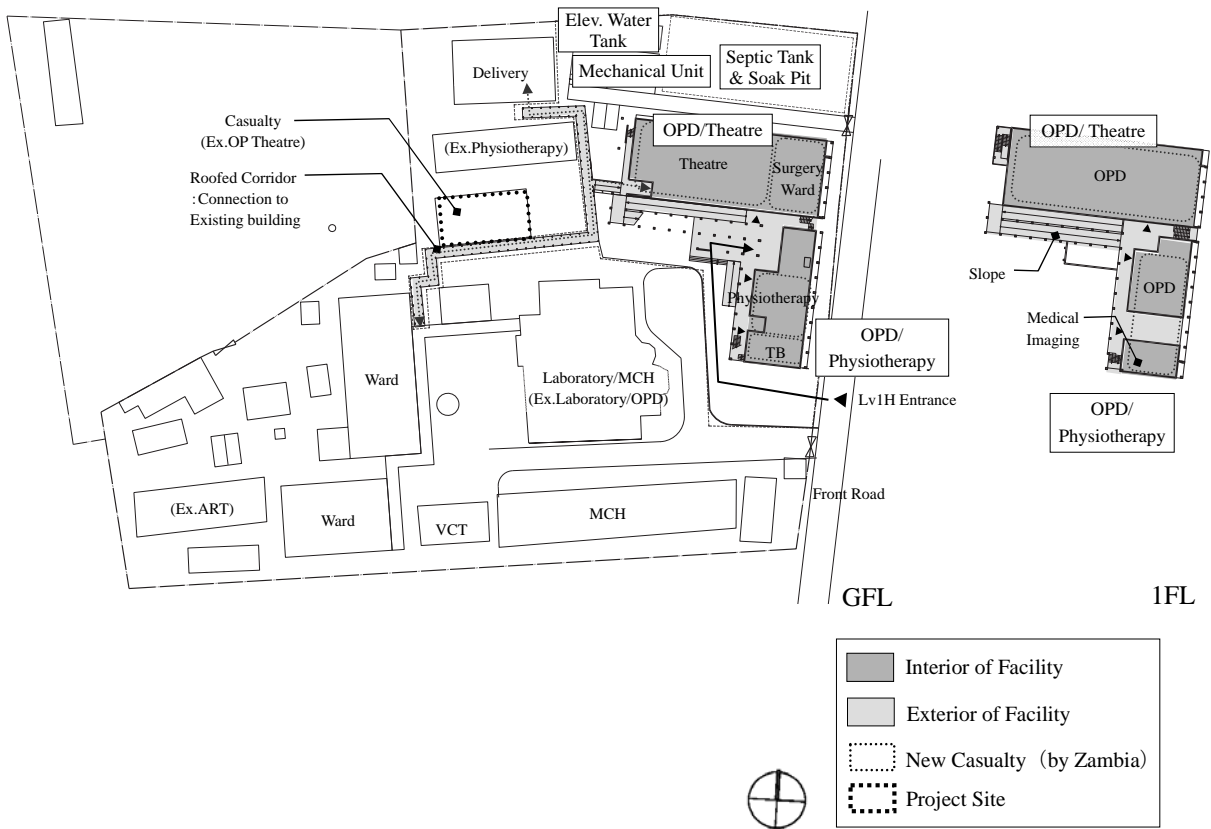


Figure 2-20 Chawama Lv1H Facility Floor Planning

• Concept of Outpatient Department Design

Main reception is placed near main entrance to guide patients to the relevant department.

Outpatient department consists of general outpatient rooms (males, females, gynaecology, eye/ENT, vitals) on the first floor of the OPD/Theatre building, paediatric and dental consultation room on the first floor of the OPD/Physiotherapy building, and TB consultation room on the ground floor. General outpatient rooms are designed in a row penetrated by route of doctors and nurses at the window side to enable smooth inter-departmental cooperation. Paediatric consultation room will be placed independently without crossing with other departments and have its own waiting space in order to prevent in-hospital infection. TB consultation room will be also placed independently on the ground floor to prevent in-hospital infection.

Toilets for patients are collectively placed at the furthest ends of both buildings in order to maintain good hygiene and prevent odours.

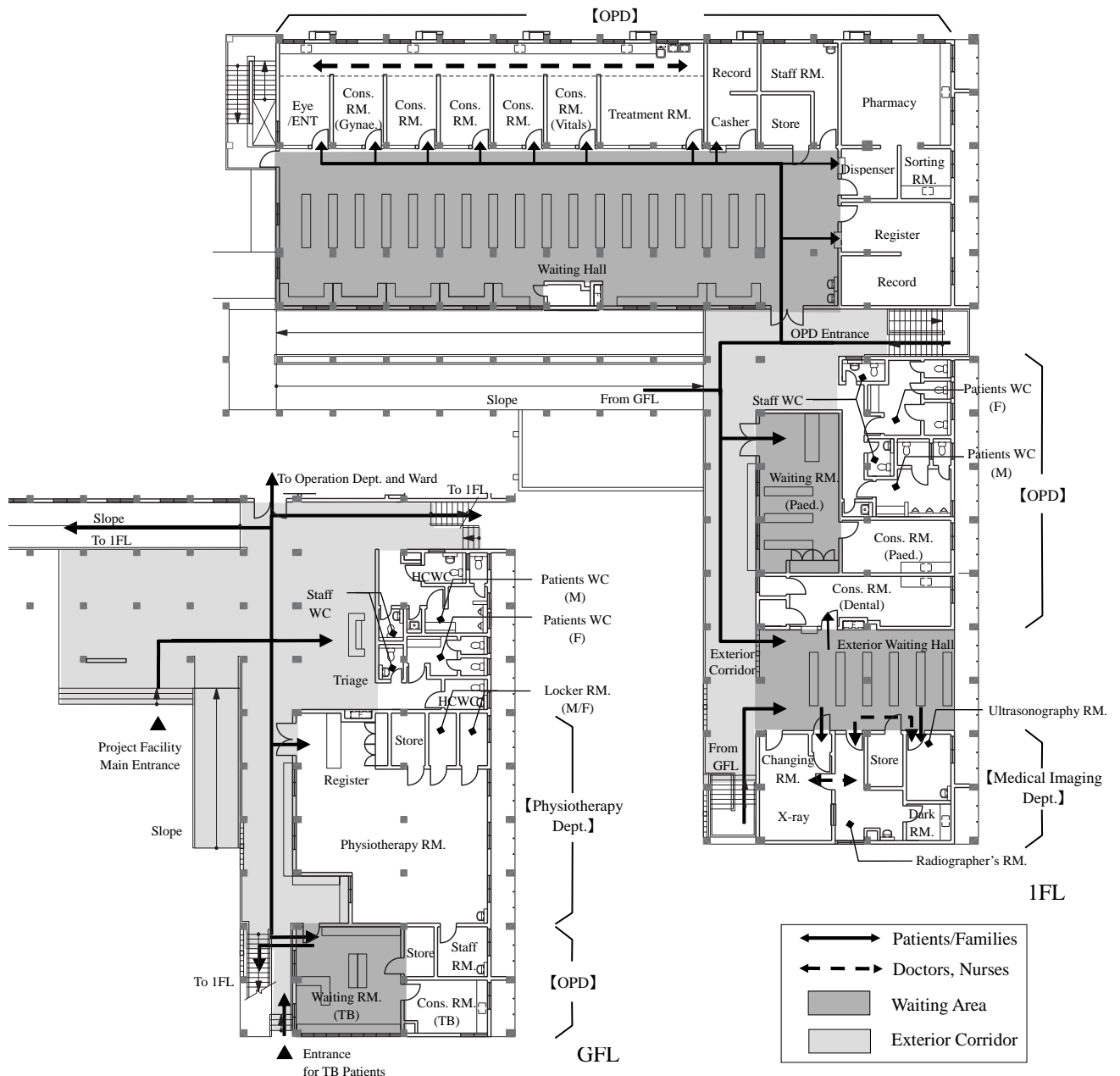


Figure 2-21 Chawama Lv1H Outpatient, Medical Imaging, and Physiotherapy Department

- Concept of Medical Imaging Department Design

Medical imaging department conducts X-ray and ultrasonography inspection. It will be placed on the first floor of OPD/Physiotherapy building together with dental consultation room and waiting hall, and both departments will be clearly separated on the other sides of the hall to prevent the confusion and congestion. Patients will access directly from the waiting hall to X-ray changing room or ultrasonography room, separately from staff route.

- Concept of Physiotherapy Department Design

Physiotherapy department will be placed on the ground floor of OPD/Physiotherapy building to facilitate access of disabled patients. As a large space is required for activities, ceiling height will be 3.0m and used by layout some equipment.

- Concept of Ward and Operation Department Design

Operation department will be placed on the ground floor to facilitate movement from existing delivery building and transfer of post-operative patients to surgery ward in order to improve their coordination. The operation department consists of an operation theatre, minor operation theatre, sluice room, sterilization room, sterilization storage, and locker room. Dirty and clean zones are clearly separated to prevent infectious diseases. Ceiling height is limited to 2.8m to reduce the air conditioning load, except for the operation theatre which requires height (3.0m high).

Ward in this building is exclusively for surgical patients and mainly after Caesarean section. It will be placed next to operation department to minimize transfer route of post-operative patients.

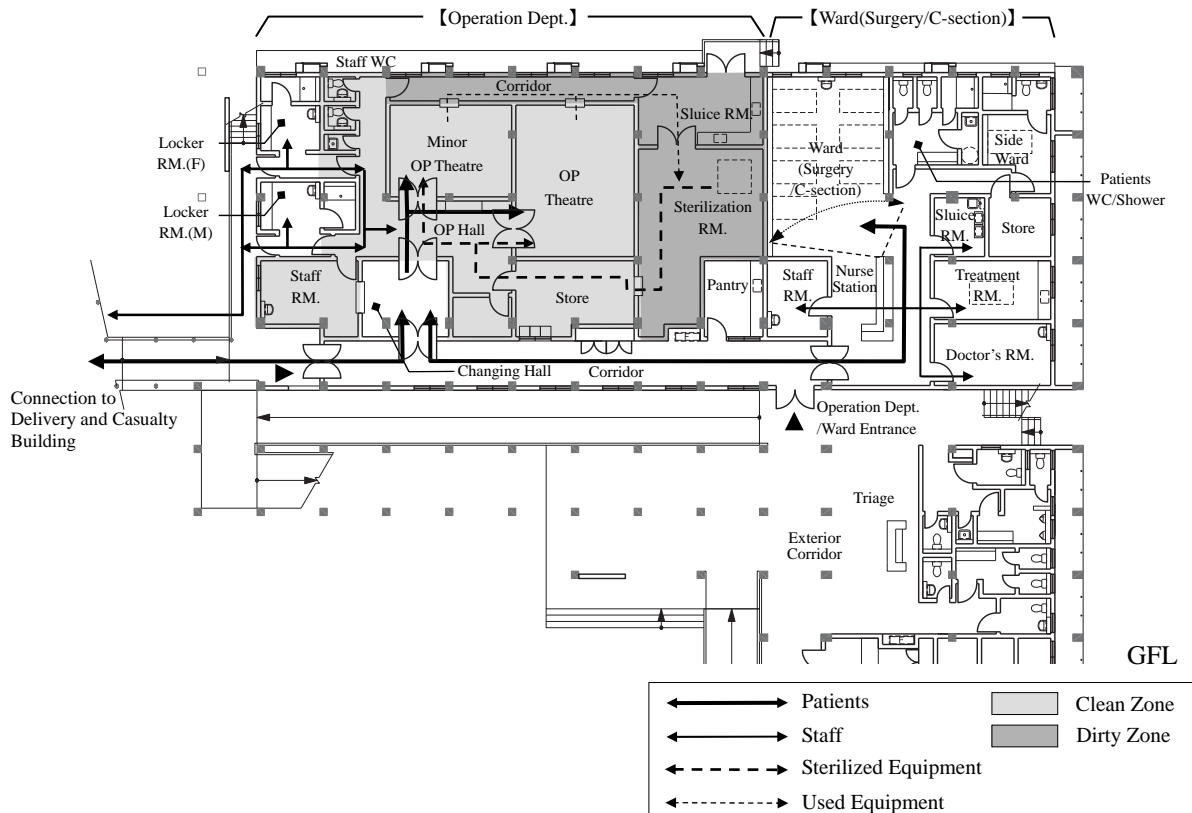


Figure 2-22 Chawama Lv1H Operation Department and Ward

② Section Planning

(1) Chipata Level 1 Hospital (Lv1H)

As the site is sloped and greatly different in height from the facility's entrance, stairs and slopes will be installed up to the height of 1.5m at the building's entrance and an external corridor will draw at the same level to consultation-related rooms at the back of the site. Buildings will be 2-storied due to the smallness of the site. The basic floor height will be 3.8m considering the required ceiling height of various rooms and space for piping of water supply/drainage equipment, etc. The underfloor piping space will be gathered to minimize the number of pits, in consideration of the economic efficiency and maintenance.

Exterior corridor will be placed in the area facing the courtyard to make a section planning with deep eaves and minimize the sunlight that comes into the building.

Common areas, such as corridors and patients' waiting spaces, will have sufficient openings, as well as pull-out windows on the high side to help natural ventilation.

Buildings will be of concrete rigid frame structure which is most common in Zambia, and exterior walls will be of masonry structure using concrete blocks. exterior walls and columns will be finished with mortar underbed and paint. The part which is visible from outside will be tiled. The roof will be a shed roof of folded metal plate which can gather the routes of rain water drainage, considering its economic efficiency and easy construction works.

In addition to a slope facing the courtyard, louvers will be installed on the south side as a shelter from rain and to minimize the strong sunlight that comes into the building.

The pipe space for piping of equipment will be installed on the external wall to facilitate the maintenance. Weather-resistant aluminium fittings will be used for window frames in consideration of the strong sunlight. The window opening will be as widest as possible except at the PS and indoor sink counter, and the elevation plan will be based on this fenestration. High windows will be used for rooms which need to protect patients' privacy, such as post-natal room and delivery room.

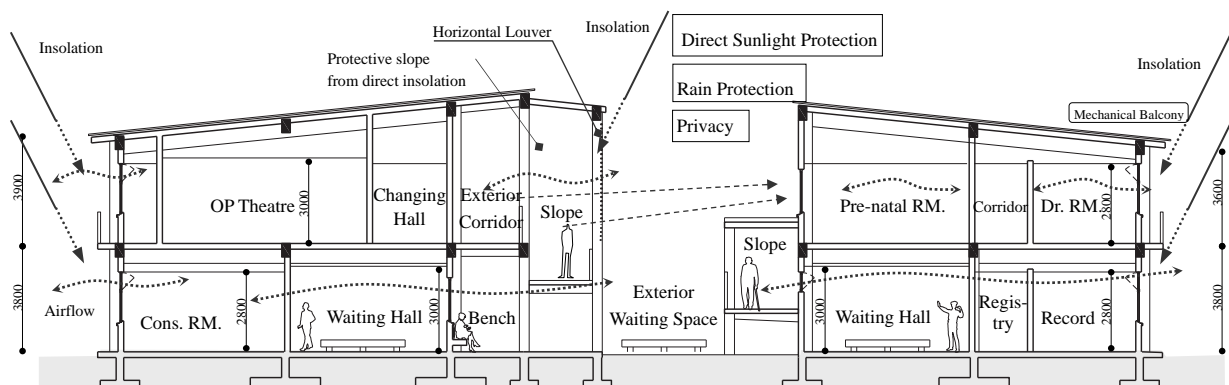


Figure 2-23 Chipata Lv1H Cross-section of Outpatient, Operation, and Maternity Department

(2) Kanyama Level 1 Hospital (Lv1H)

Similarly as at Chipata Lv1H, the basic floor height will be 3.8m considering the required ceiling height of various rooms and piping space of equipment for water supply/drainage, etc.

Exterior corridor and slope will be placed on the north-western side of OPD/Ward building to minimize the sunlight that comes into the building. Common areas, such as corridors and patients' waiting spaces, will have sufficient openings, as well as pull-out windows on the high side to help natural ventilation.

The level of the ground floor is set 600mm higher than the ground surface considering that flood occurs frequently in the area.

The same elevation plan as the one for Chipata Lv1H will be used for both structure and finishing work. Louvers will be installed in front of the slope as a shelter from rain and to minimize the strong sunlight that comes into the building.

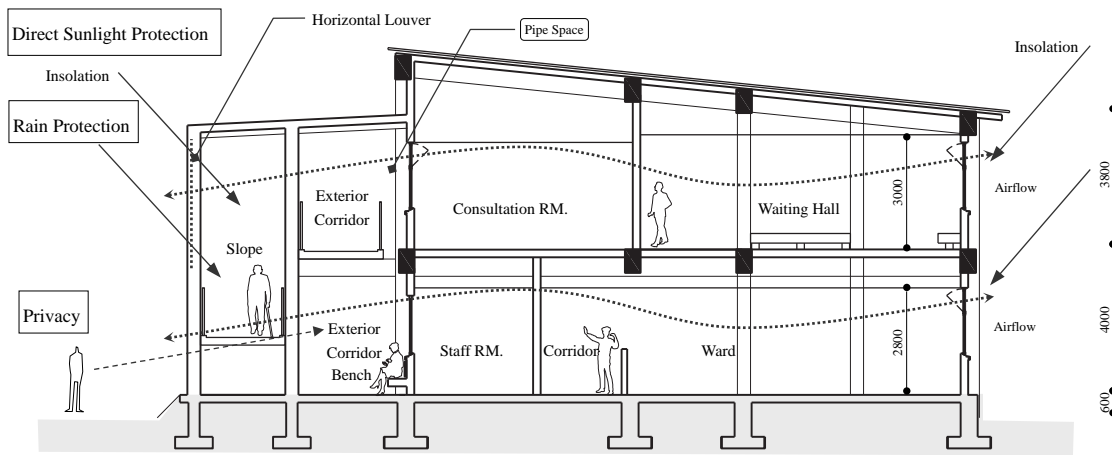


Figure 2-24 Kanyama Lv1H Cross-section of Outpatient Department and Ward

(3) Chawama Level 1 Hospital (Lv1H)

Similarly as at Chipata Lv1H and Kanyama Lv1H, the basic floor height will be 3.8m considering the required ceiling height of various rooms and piping space of equipment for water supply/drainage, etc.

Slope and exterior corridor will be placed on the south side of OPD/Ward building and on the west side of OPD/Physiotherapy building respectively to minimize the sunlight that comes into the building. Common areas, such as corridors and patients' waiting spaces, will have sufficient openings, as well as pull-out windows on the high side to help natural ventilation.

The level of the ground floor is set 600mm higher than the ground surface considering that flood occurs frequently in the area.

The same elevation plan as the one for Chipata Lv1H and Kanyama Lv1H will be used for both structure and finishing work. Louvers will be installed in front of the slope as a shelter from rain and to minimize the strong sunlight that comes into the building. Balconies for equipment and louvers to hide them will be installed on the side of the front road to minimize the strong sunlight that comes into the building.

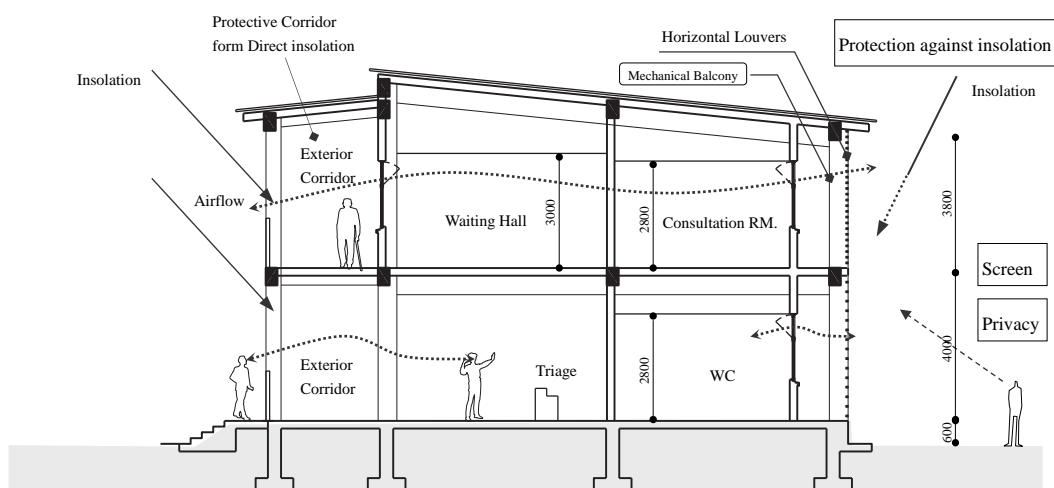


Figure 2-25 Chawama Lv1H Cross-section of Outpatient Department

2-2-2-3-2 Structure Plan

We commissioned RANKIN, a ground investigation company located in Lusaka City, to conduct a ground investigation. This Company did the investigation at the Phase 1 Project as well. Based on the investigation results, the ground condition of the planned construction sites is summarised below.

1) Chipata Level 1 Hospital (Lv1H)

According to the ground survey, the ground consists of land elevation on the surface, soft sandy soil containing gravel up to the depth of 1.3m below the land elevation and very hard silty sandy soil at a greater depth.

2) Kanyama Level 1 Hospital (Lv1H)

According to the ground survey, the ground consists of land elevation on the surface, soft sandy soil containing gravel up to the depth of 1.0m below the land elevation and rocks at a greater depth. However, some places of the same depth do not contain rocks but consist of soft sandy soil containing gravel.

3) Chawama Level 1 Hospital (Lv1H)

According to the ground survey, the ground consists of land elevation on the surface, soft sandy soil containing gravel up to the depth of 2.5m below the land elevation and rocks at a greater depth. However, some places of the same depth do not contain rocks but consist of soft sandy soil containing gravel.

4) Recommended Allowable Soil-bearing Capacity by the Ground Investigation Company

The following table outlines the foundation depth and allowable soil-bearing capacity for each site recommended by the ground investigation company.

Table 2-21 Recommended Foundation Bearing Capacity and Soil Depth

Site	Above sea level of designed GL (m)	Above sea level of Recommended bearing stratum (m)	Recommended base depth (m)	Recommended allowed soil bearing capacity (kPa)
Chipata	1234.75	1232.80	1.95	150
Kanyama	1277.25	1275.10	2.15	70
Chawama	1279.50	1278.00	1.50	30

(1) Foundation Planning

1) Chipata Lv1H

The foundation bed will be a spread foundation of almost the same level as the designed GL (ground level). Soil improvement will be conducted from the bearing stratum to the

foundation bed as done in the Phase 1 Project. The bearing stratum will be hard silty sandy soil at around -2.0m of the designed GL.

2) Kanyama Lv1H

The foundation bed will be a spread foundation at -1.2m of the designed GL. Rocks which appear under the foundation bed will be the bearing stratum, and soil improvement will be conducted from the rocks to the foundation bed as done for Matero Lv1H and Chilenje Lv1H. Areas without rocks will go through the soil improvement up to around -2.4m of the designed GL

3) Chawama Lv1H

The foundation bed will be a spread foundation at -0.65m of the designed GL. Similarly as for Kanyama Lv1H, rocks which appear under the foundation bed will be the bearing stratum and soil improvement will be conducted from the rocks to the foundation bed. Rocks appear about 2m deeper than in Kanyama Lv1H site, and the range of soil improvement will be greater. As areas without rocks contain a thicker stratum of soft sandy soil than in Kanyama Lv1H site, the bottom of soil improvement will be at around -3.2m of the designed GL.

(2) Structure Planning

As the buildings is used as a hospital, the importance factor $I = 1.5$ is used. Their earthquake resistance (buildings' resistance against seismic load) will be 1.5 times stronger than for normal buildings.

1) Chipata Lv1H

Each building will be a two-storey building with a basic grid of 3 m x 6 m, and will employ a pure steel moment frame made with RC to enhance the planar freedom. Each building will be separated by Expansion Joint to avoid harmful degeneration and/or cracking at the connecting part. The roof will be designed with RC slabs, but we will use folded-plate metal sheets for finishing with the necessary thickness as a lightweight solution. The drainage slope will be designed by slanting the roof slabs.

Making the first floor a concrete slab-on-grade will lead to harmful degeneration and/or cracking, so the slabs for the first floor will be designed using RC slabs.

2) Kanyama Lv1H

Each building will be a two-storey building with a basic grid of 3 m x 6 m and 4.2 m x 6 m, and will employ a pure steel moment frame made with RC to enhance the planar freedom. The roof will be designed with RC slabs, but we will use folded-plate metal sheets for finishing with the necessary thickness as a lightweight solution. The drainage slope will be designed by slanting the roof slabs.

Making the first floor a concrete slab-on-grade will lead to harmful degeneration and/or cracking, so the slabs for the first floor will be designed using RC slabs.

3) Chawama Lv1H

Each building will be a two-storey building with a basic grid of 3 m x 6 m, and will employ a pure steel moment frame made with RC to enhance the planar freedom. The roof will be designed with RC slabs, but we will use folded-plate metal sheets for finishing with the necessary thickness as a lightweight solution. The drainage slope will be designed by slanting the roof slabs.

Making the first floor a concrete slab-on-grade will lead to harmful degeneration and/or cracking, so the slabs for the first floor will be designed using RC slabs.

(3) Design Load

1) Fixed Load

The fixed load will be calculated from the weight of construction materials, finishing materials, and other building fixtures such as equipment piping and ducts.

2) Movable Load

The movable load will be set according to the British Standard (BS CP3 Ch.V. Pt.1) and the Building Standards Act in Japan. The table below shows the movable load for the main rooms:

Table 2-22 Loading Capacity of the Main Rooms

Unit: N/m ²	
Room Name	Movable Load
Pitched Roof	1,000
Various Hospital Facilities, Lavatory, Toilet	2,000
Office, Consulting Room, Treatment Room	3,500
Corridors, Stairs	4,000
Waiting Room	5,000

3) Wind Load

The wind load will be determined based on the British Standard (BS CP3 Ch.V. Pt.2). Since observation of wind speed started in July 2000, the maximum speed recorded is 4.1 m/s in September 2006. To use the data as they are, however, the amount of statistics is obviously insufficient. Therefore, as a wind speed for the design, we will employ 38 m/s, the minimum value of the fifty-year return period expectation in the BS.

The wind load can be calculated using the following formula:

$$F=C_f \cdot q \cdot A$$

$$q=1/2\rho \cdot V^2$$

Where:

C_f : Wind factor (1.2)

- A : Area to receive wind
- ρ : Air density (=1.01 N/ m³, considering an altitude of 1200 m in Lusaka City)
- V : Wind speed for design (38 m/s)
- q : Velocity pressure for design (729 N/ m²)

4) Seismic Load

Since no earthquakes have been recorded in Zambia and we have no calculation base for seismic loads, we assume CB = 0.05 for the base shear coefficient.

(4) Structure Calculation

Structure calculation is made according to the limit state design of the British Standards. Combinations of loads are presented below. Please note that the coefficient of a seismic load here is the same as that of a wind load.

- ① 1.4 Gk+1.6 Qk
- ② 0.9 Gk+1.4 Wk
- ③ 0.9 Gk+1.4 Ek
- ④ 1.2 Gk+1.2 Qk+1.2 Wk
- ⑤ 1.2 Gk+1.2 Qk+1.2 Ek

Here:

- Gk : Fixed load
- Qk : Movable load
- Wk : Wind load
- Ek : Seismic load

2-2-2-3-3 Mechanical and Electrical (ME) Systems

(1) Electrical System

1) Important Points Concerning Electrical System at the Level 1 Hospitals

- a. Comfortable, easy-to-use for staff and patients.
- b. Concerning local environment by saving energy with high efficient equipment.
- c. Economical, simple system in consideration of life cycle cost.
- d. Reliable system for troubles such as power outage.
- e. Flexible to renovation/expansion of facilities.

In addition to above points, adequate discussion will be conducted with parties involved, such as the MOH, level 1 hospitals, Fire Department, electricity and telephone companies, to examine the cost performance and construction methods.

2) Urban Infrastructure Installation Plan

① Electrical Incoming Connection

Construction works to be covered by Zambia are as follows:

- a. Aerial cable connection of an 11kV three-phase three-wire 50Hz line from the front road to switch on leading-in pole, for power supply lead-in.
- b. Maintenance and test operations from the 11kV three-phase three-wire 50Hz aerial lead-in cable to transactional watt-hour meter on the main switchboard after the completion of construction.
- c. Removal and turning work of existing cables and equipment on the sites.
- d. Installation of lead-in pole 1 on site boundary and a fusible switch on lead-in pole.
- e. Installation and connection of 11kV power cable from the secondary side of fusible switch to 11kV ring main unit in electricity room.

Construction works to be covered by Japan are as follows:

- a. Installation of a transformer (315kVA 11kV/380-220V) in electricity room.
- b. Installation of an emergency generator (3-phase 4-wire 380-220V 150kVA).

② Telecommunications Installation

Construction works to be covered by Zambia are as follows:

- a. Aerial or underground installation and connection of optical cable from the optical cable cabinet of the telephone company (ZAMTEL) near each level 1 hospital to the indoor telecommunications modem.

- b. Installation and line arrangement of telecommunications modem and optical patch panel in telecommunications room.
- c. Maintenance and test operations of optical cable and telecommunications devices after the completion of construction.

Construction works to be covered by Japan are as follows:

- a. Electronic switchboard, MDF (main distribution frame) and telephone set to be installed in telecommunications room.
- b. Electronic switchboard, MDF (main distribution frame) and telephone set to be installed in telecommunications room.
- c. Wiring and connection from the intermediate distributing frame installed in each EPS to each telephone outlet.
- d. Installation of LAN core switch in telecommunications room, and edge switch and patch panel in each EPS (electric pipe space).

3) Electrical Utilities

① Power Supply Equipment

AVR (automatic voltage regulator) shall be provided for some medical equipment which is readily affected by voltage fluctuation, because voltage of commercial power supply fluctuates a lot. The capacity of AVR fuse on input side should have double size of the capacity normally used by the manufacturer in order to buffer the influence of voltage fluctuation. In addition, AVR shall not be placed directly on the floor, but on the table in order to avoid shock from outside. Since power cut occurs daily in Zambia, it is imperative to install a diesel power generator as an emergency power system. Devices to be provided with emergency power shall be equipment that should not be stopped due to power cut, air conditioners, ventilation fans, lighting sockets, etc. to be used in casualty department. Generator will be provided with minimum necessary capacity. Specification of generator will be the package type with fuel supply from a service tank (day tank). Appropriate sound isolation, noise reduction, and vibration control will be provided to avoid causing nuisance to surrounding environment. Capacity is estimated to be 150 kVA as the same as the capacity adopted in Matero Lv1H and Chilenje Lv1H in the Phase 1 Project.

② Electrical Light Socket Systems

- a. Considering energy saving, the LED light shall be adopted for light equipment.
- b. To maintain hospital, a half of lights in corridors, 20% of ones in office and laboratory, and critical medical equipment will be connected to power generator.
- c. Design illuminance will be set efficiently to consider energy saving.

- d. Sockets will be basically BS standard sockets (with a switch), which are generally used in Zambia, and position and specifications according to the type of power source, capacity, and connection method of the devices will be discussed more specific.

③ Lightning Protection / Grounding System

- a. The region has frequent lightning, so that external lightning protection with aerial conductor shall be installed to protect facilities from lightning strikes. Lightning arrestors will be installed at the draw-in side of high voltage system.
- b. According to each specification, grounding system shall be provided for the medical equipment, power devices, communication devices, etc.

④ Communication Device

- a. Telephone sets will be digital phones.
- b. Cable wiring will be put by conduit pipe or cable ladder from LAN outlet to the nearest patch panel
- c. Supposing that external line needs 3-5 circuits and internal line 0.02 circuits/m², each line will be planned within the range of 30-50 circuits.

⑤ Public Address System

- a. Independent public address system for outpatients will be installed separately from public address system in the entire hospital.
- b. Public address will be enabled from telephone sets for convenience.

⑥ Nurse Call System

Nurse call base unit will be installed in nurse station, and handsets at each bed (inpatient).

⑦ Fire Alarm System

- a. Fire alarm system in compliance with the rules and standards in Zambia shall be installed. Emergency exit sign lighting shall also be installed. These are only applied to new buildings in the scope of the Project.

⑧ Television Audience Equipment

- a. Japan shall be responsible for installing antennas, distributors, wiring and outlets, and the hospitals shall be responsible for installing the televisions.
- b. Outlets will be basically provided in each waiting hall and staff room.

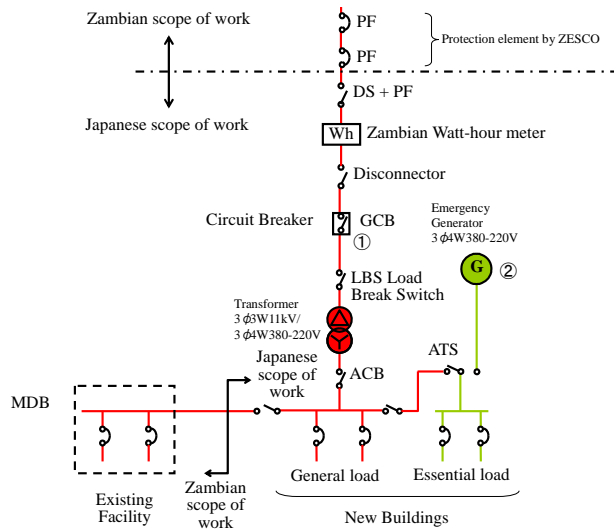


Figure 2-26 Power Supply Flow

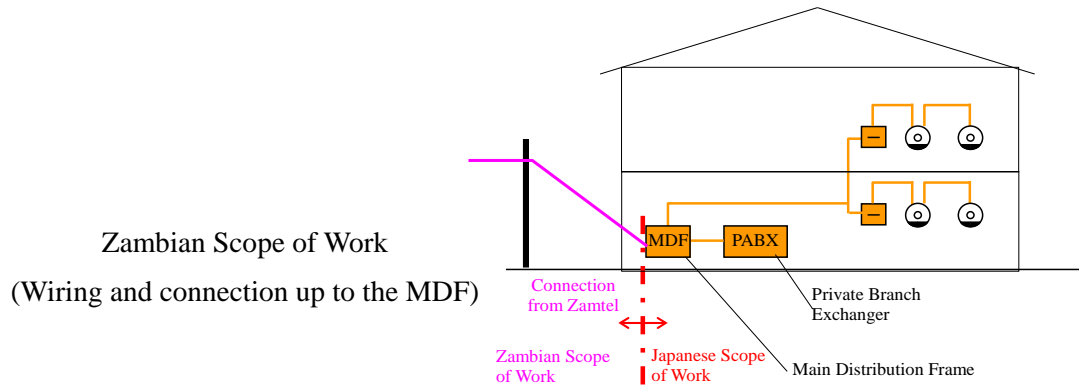


Figure 2-27 Telecommunication Schematic

(2) Mechanical System

The key points in making a mechanical equipment plan for the Project are as follows:

- a. Considering that the building will be used as a hospital and infrastructure around the building has not yet been fully developed, planning shall ensure a safe and stable system that allows continuity of operations for certain time even when infrastructure breaks down.
- b. Considering the difficulty in procuring commodities, planning shall employ a simple system so that maintenance work will be easy to conduct.
- c. Environmental friendly system should be established by utilizing natural environment of the site, for example, natural ventilation, rainwater utilisation, and solar water heaters combined with building plan.

1) Water Supply System

According to the report from local waterworks bureau, water pressure in the main water supply pipe is very low, and also due to the size of the existing main pipe, 50mm lead-in pipe planned in the Project cannot be branched off. It is thus indispensable to build a new deep well (covered by Zambia) and secure water amount in order to supply enough water to the planned buildings.

According to the water quality survey by a local organization, microbes were detected in sample water of the existing shallow well. Water purification facility shall be installed in new deep well.

Since new buildings will have two stories, elevated water tank shall be installed to secure the water pressure.

Water from the water receiving tank shall be divided into treated water for general supply and untreated water for miscellaneous use, which will be pumped up to separate water tanks respectively, and be supplied separately to wash basin faucets, flush toilets, etc.

The new well (covered by Zambia) can be built at the site at the depth about 80m according to hearing of local installation specialists, since Lusaka has abundant groundwater.

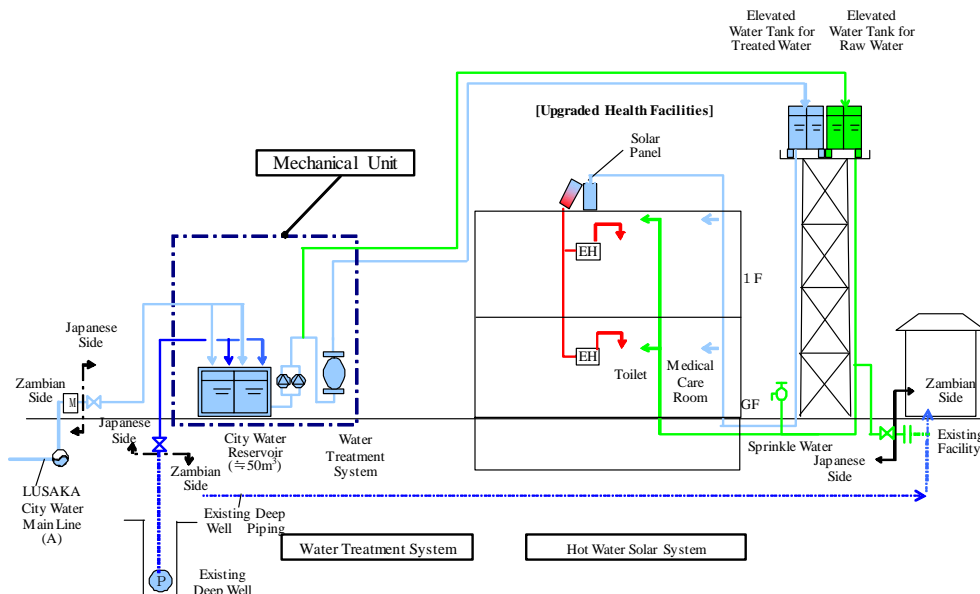


Figure 2-28 Water/Hot water Supply Flow

2) Hot-water Supply System

Individual electric water heaters, as well as supplementary solar water heaters, will be installed where hot water is required.

3) Drainage System

Public sewer pipes are not laid around the hospitals. Sewage water will be treated in soil penetration type septic tank. Wastewater treated in septic tank and miscellaneous drainage will be treated in soak pit. Overflow pipe will be installed and connected to storm water ditch, to dispose wastewater which cannot be treated in soak pit.

At the new facility in Kanyama, laboratory wastewater which contains acid or alkaline will be flowed into soak pit after neutralization process.

Ditches will be built around new buildings and the final rainwater basin on the site where rainwater is collected and release to roadside ditch outside hospital site. The installation of rain drainage pipe from the final rainwater basin to roadside ditch will be constructed by Zambia.

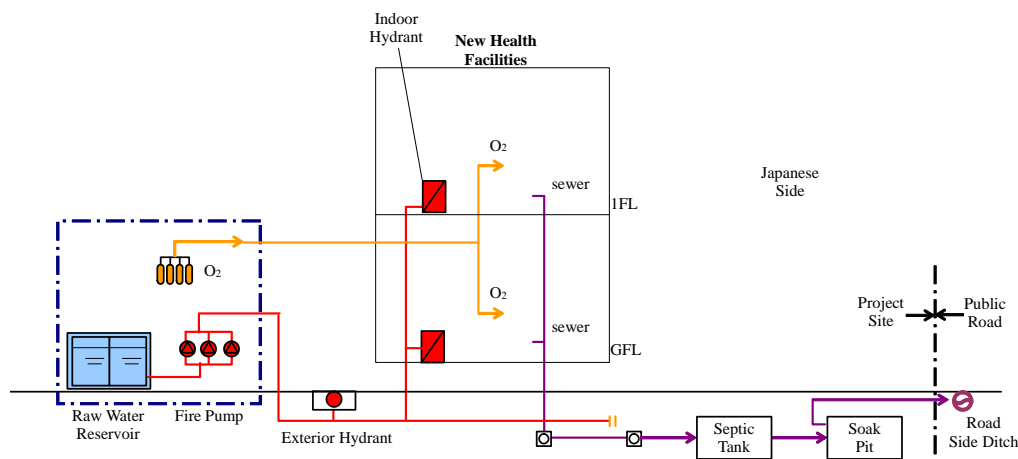


Figure 2-29 Drainage/Fire/Medical Gas Flow

4) Sanitary Fixture

Toilet basin will be European style, flushing type with a tank.

Medical faucets with arm-operated lever will be installed to prevent direct contact by hands.

Service basins and waste basins will be installed in relevant rooms.

5) Fire Fighting Water System

Indoor fire pump units and pressurizing pump from water receiving tank from new well (covered by Zambia) will be installed and connected to fire hose reels in various places by piping. Outdoor fire pump units and pressurizing pump will be installed and connected to outdoor fire hydrant

6) Medical Gas Supply

Medical gas will be supplied only oxygen by network.

7) Waste Treatment Facility

Waste from hospital will be collected separately as general waste and medical waste. The former is collected and buried regularly by the city, and the latter is burned in existing incinerator on the site. New incinerator will not be introduced in the Project.

Special medical waste which cannot be treated in current incinerator will be specially treated by Zambia in principle.

8) LPG Supply

It shall be considered to supply LPG (Liquefied petroleum gas) to safety cabinets in the laboratory, dental laboratory, etc.

9) Heat Ventilation Air Conditioning (HVAC) System

Air conditioners and ceiling fan will be installed individually in selected rooms.

Ventilation fan will be installed in relevant rooms

The air pressure will be positive in operation area, post-natal room, and premature room in order to prevent airborne infections.

The air pressure will be negative in laboratory to prevent contaminated air leakage

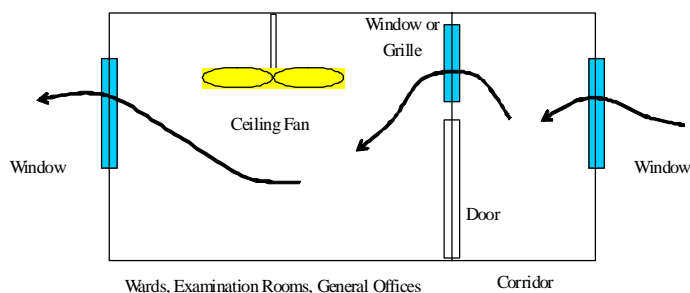


Figure 2-30 Ventilation System for Wards, Examination Rooms, and General Offices

Air conditioner (cooling and heating) will be installed individually, for areas that require an air conditioning system as part of medical activities including the premature room, laboratory and operation area. In generally a wall-type air conditioner with recyclable standard type of filter will be adopted. For operation theatre, an independent type of ceiling cassette air conditioner with fine filter will be designed.

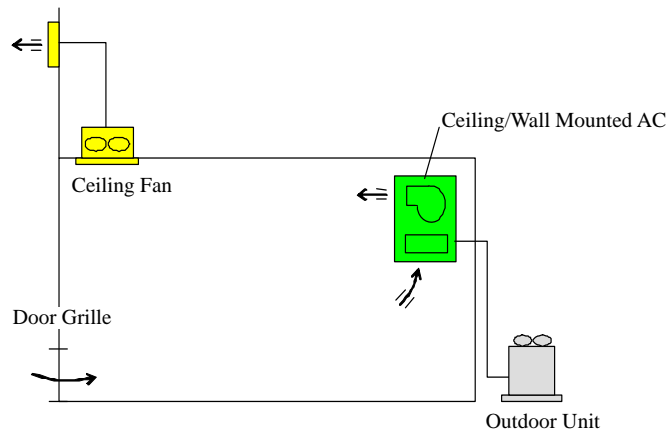


Figure 2-31 Most of Air-Conditioned Room

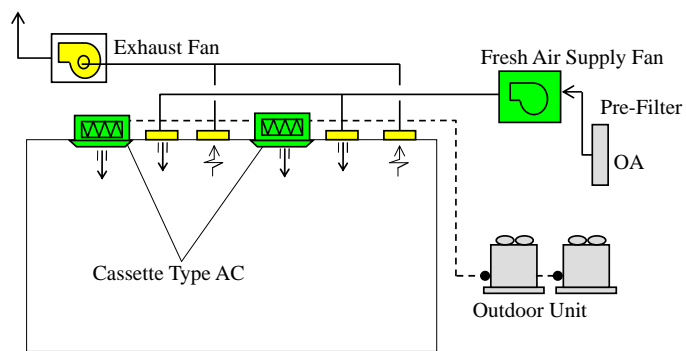


Figure 2-32 Independent Air-Conditioner in Operation Theatre

The table below shows main rooms provided air conditioning and its method.

Table 2-23 Main Rooms with Air Conditioning and Its Air Conditioning Method

Room	Air Conditioner 1)	Room Pressure 2)	Air filter 3)	Remark 4)
Operation theatre	C	P	M	Cooling and heating
Post-natal RM.	W	P	L	Cooling and heating *
Premature RM.	W	P	L	Cooling and heating *
Laboratory	W	E	L	
General RM.(with A/C)	W	E	L	*
General RM.(no A/C)		E		

Note 1) C: Ceiling Cassette Type; W: Wall Type

2) P: Positive Pressure; N: Negative Pressure; E: Equal Pressure

3) M: Medium Efficiency; L: General

4) *: The air conditioner with power supply from generator in case of emergency

Chipata Level 1 Hospital (Lv1H)

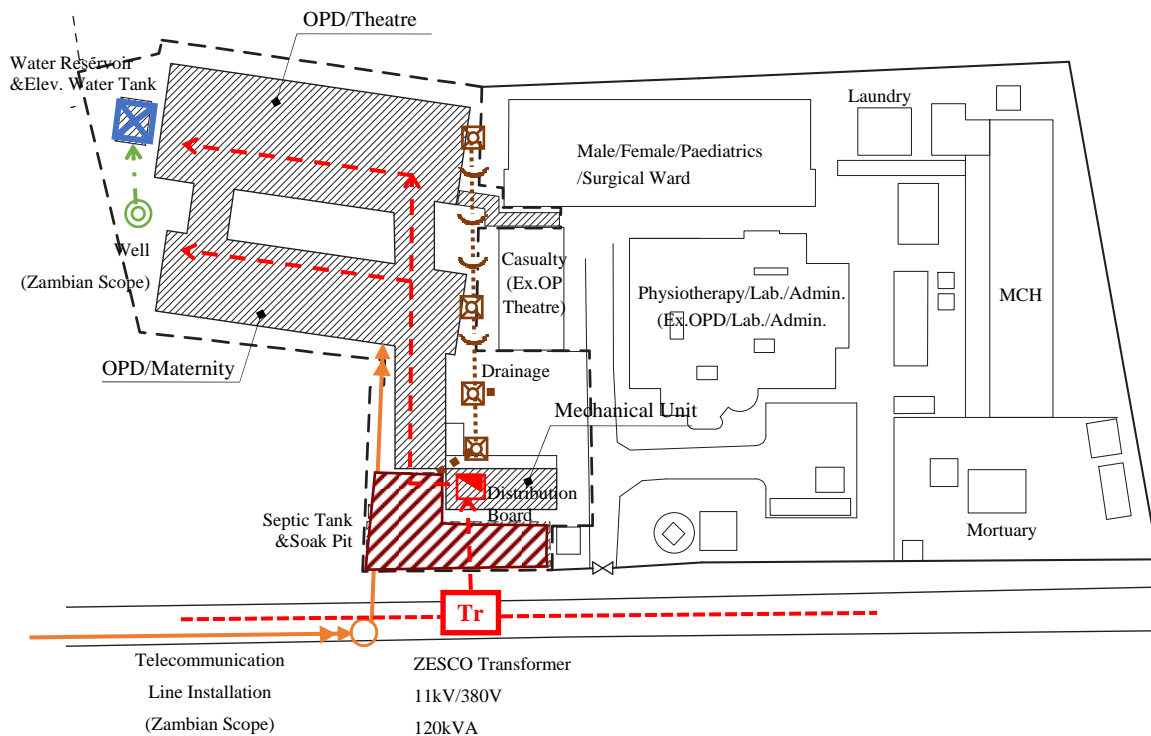


Figure 2-33 Chipata Lv1H Infrastructure Installation Plan

Kanyama Level 1 Hospital (Lv1H)

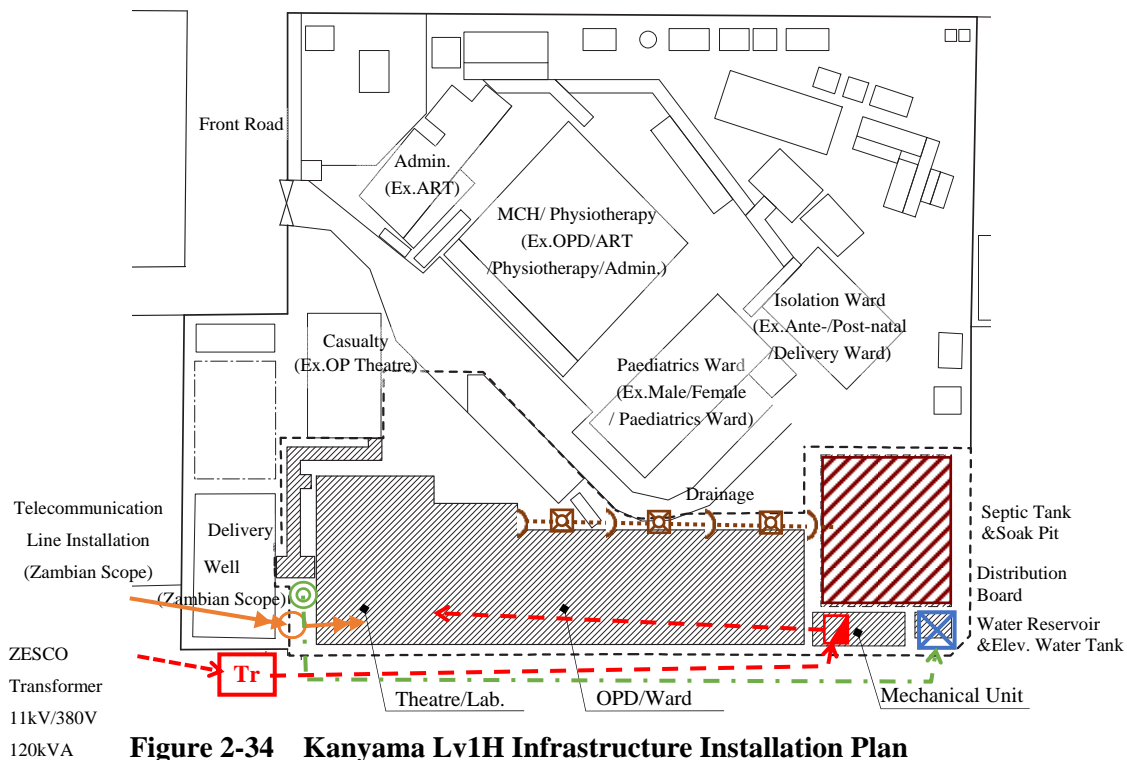


Figure 2-34 Kanyama Lv1H Infrastructure Installation Plan

- | | | | |
|--|--|--|----------------------------|
| | Transformer and Electrical Supply Line | | Distribution Board |
| | Septic Tank and Soak Pit | | Well and Water Supply Line |
| | Telecommunication | | Elevated Water Tank |
| | Drainage | | Sewage Square |

Chawama Level 1 Hospital (Lv1H)

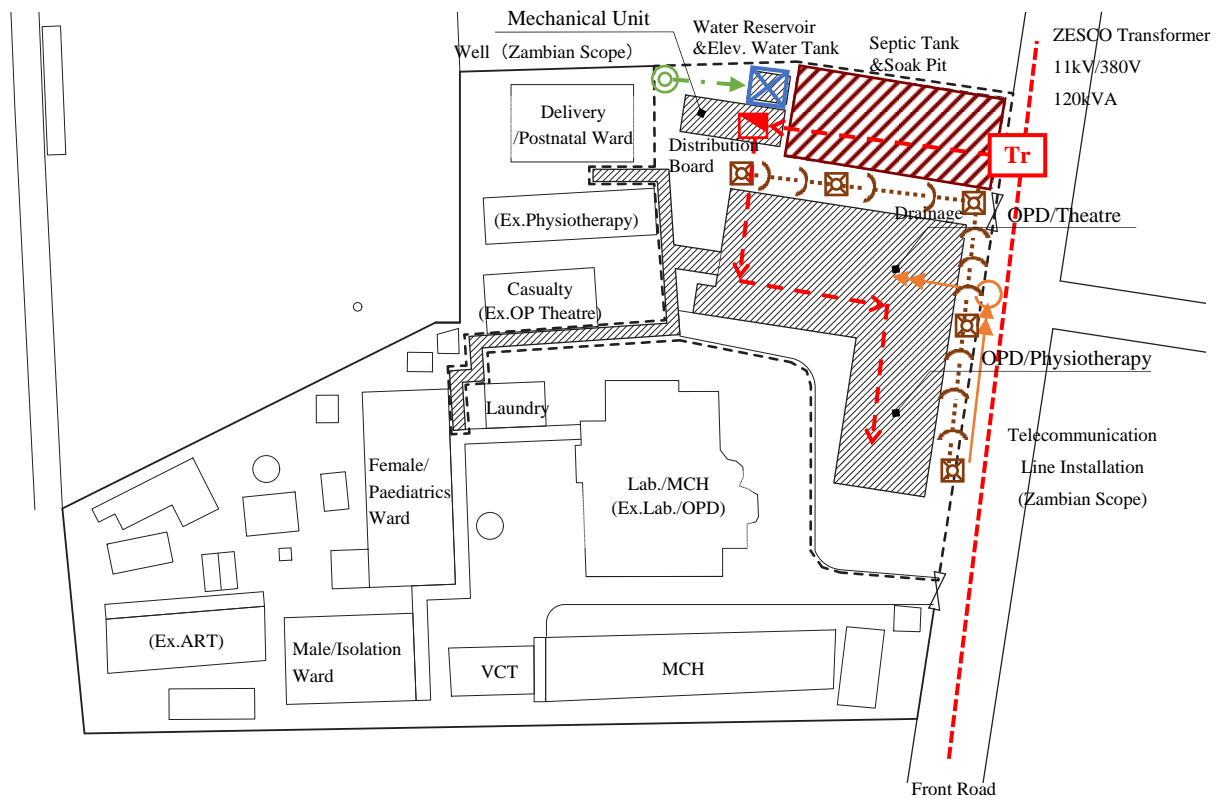
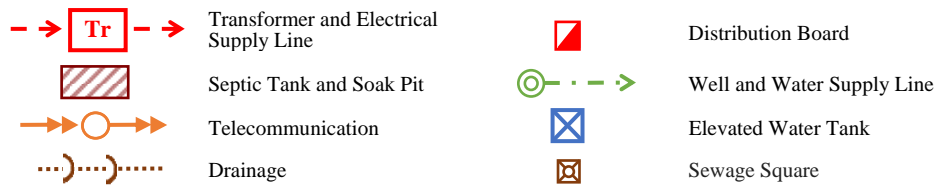


Figure 2-35 Chawama Lv1H Infrastructure Installation Plan



2-2-2-3-4 Construction Material

In selecting building materials, the main criteria are whether the materials or construction method are rooted in Zambia, because they are easy to maintain. The following points are to be kept in mind in selecting basic materials for three hospital facilities: Chipata Lv1H, Kanyama Lv1H, and Chawama Lv1H.

(1) Building Frames

1) Ordinary Portland Cement

There are several ordinary Portland cement (compliant with the Zambia Bureau of Standards) products manufactured in this region including that made by LAFARGE CEMENT ZAMBIA PLC, a France-based company. The price is equivalent to that in Japan.

2) Aggregate

Aggregate is mined in the Lusaka suburbs. Coarse aggregate and fine aggregate are processed.

3) Mixing Water

Mixing water shall be equivalent to clean water. In principle, recycled water will not be used.

4) Admixture

As a general rule, admixture will not be used. In the case where it is needed, however, it may be used.

5) Ready-mixed Concrete

There is a company that supplies ready-mixed concrete in the Lusaka suburbs. The company has a concrete-mixing vehicle and a concrete-pumping vehicle as well. However, considering reliability of quality and consistent procurement, concrete is basically mixed on site. The concrete grades used there are 15 MPA, 20 MPA, 25 MPA, 30 MPA, and 35 MPA.

The conditions for mixing will be basically according to the Japanese Architectural Standard Specifications and JASS5 (Architectural Institute of Japan).

6) Reinforcing Steel

Reinforcing steel is not manufactured in Zambia. The main steel distributed here is made in the Republic of South Africa (compliant with SABS: South African Bureau of Standards). There are round bars and deformed reinforcing bars. The diameter of reinforcing steel ranges

from R6, D8, D10, D12, D16, D20, D25, D32, D40, to D50. The strengths of reinforcing steel used are 250 N/mm² and 450 N/mm².

7) Iron Frames

Iron frames are not manufactured in Zambia. The main kind of frame distributed there is that made in the Republic of South Africa (compliant with SABS: South African Bureau of Standards).

(2) Exterior Finishing Materials

1) Roof

To avoid water leakage, which promotes deterioration of buildings, the roofs will have slope of about 1/10, placed folded metal plates over concrete slabs as a finishing material. Folded metal plates to be chosen here should be procurable in the region, making them easier to maintain.

2) External Wall

To ensure easy maintenance of property, external walls shall be paint finish on a mortar setting over concrete block masonry, which is commonly used in the region. Paint to be used there is what can follow cracks to prevent deterioration of the buildings.

(3) Interior Finishing Materials

1) Floor

For areas where many patients gather such as OPD, administration rooms, wards, and patients' rooms; the floor will be terrazzo fabricated on site or tiles, which are easy to clean and durable.

2) Interior Wall

For specific rooms using water such as toilets and shower, wall shall be covered by tiles, which are easy to wipe off dirt. Other general area will be paint-finished on mortar setting.

Rooms for radioactive rays should be surrounded by thick reinforced concrete walls or protecting cover of iron / lead materials, which protect environment from radioactive influence.

In areas where stretchers or other equipment might bump against the walls of corridors, internal walls, external corners of columns; stretcher guard or corner guard shall be installed. Stretcher guard can also be available as handrail.

3) Ceiling

- ① For water closet such as toilet and shower room, as well as operation theatre room that requires clean environment, ceilings shall be paint-finished on calcium silicate plate, which is easy to clean and maintain.
- ② To prevent grit or dust falling down under the roof, ceiling will be generally installed. Ceilings for general rooms, testing and sterilisation rooms, and waiting space will be installed with rockwool acoustic board.

(4) Doors and Windows

For external openings, aluminium sashes shall be installed, because they are resistant to weather. Delivery rooms, which need to be durable and easy to clean, shall be installed with stainless doors.

General interior doors and windows shall be lightweight steel fittings. For machine rooms, we will use steel fittings for noise reduction and durability. X-ray room fittings shall be backed with lead plates, since radioactive ray protection is required.

The table below summarises the finishing materials mentioned above and the related construction methods:

Table 2-24 Finishing Materials and Construction Method

Area	Construction Method Common in the Regions (incl. existing buildings)	Construction Method in the Project	Reason
Roofs	Pitched roof (with folded galvalume plate placed)	Pitched roof (with folded metal plate placed)	Easy to maintain
External Walls	Mortar setting + EAP paint finishing	Mortar setting +EAP paint finishing	Common construction method in the region They know how to maintain it very well.
Floors	Terrazzo fabricated on site	Terrazzo fabricated on site	The materials are commonly used in the region. Relatively easy to maintain, easy to clean
Walls	Mortar setting + EP finishing	Mortar setting + EP finishing	Common in the region, relatively easy to maintain
Ceilings	Rockwool acoustic board	Rockwool acoustic board	Common in the region, relatively easy to maintain
Doors & Windows	Steel window Aluminium window	Aluminium window	Aluminium is widely used in the region and highly resistant to weather.
	Wood door Steel door	Lightweight steel fittings	High durability and operability, easy to maintain with re-painting To be used inside
		Steel fittings	Good sound insulation To be used in the mechanical room, etc.
		Stainless fittings	High durability and easy to clean To be used for main gates, gates of surgery rooms, etc.

(5) Utilities

As service life of most equipment is 10-15 years, it is important that they have a certain level of quality to facilitate maintenance skill including renewal, Zambia by themselves after the completion of construction. Therefore, utilities will be procured locally or from countries other than Japan and the recipient country whose products have been already on the market with experience in use in Zambia (South Africa, etc.) as much as possible. However, products made in Japan or by Japanese companies in Southeast Asian may be used for secure functions. In this case, measures for manufacture support service (maintenance/repair) must be examined, such as whether the company has an agency nearby or not.

2-2-2-4 Medical Equipment Plan

(1) Basic Principles

In the selection of equipment to develop in the Project, the medical equipment will be consistent with clinic subjects in the facility plan, and at the same time it will be carried out by taking into consideration the following aspects.

- ① Medical equipment required for basic medical treatment at project facilities
- ② Medical equipment required to increase due to lack of volume of equipment
- ③ Medical equipment that can be operated and maintained certainly on site
- ④ Medical equipment with high expected benefits/cost-effectiveness
- ⑤ Medical equipment that establishes medical application
- ⑥ Medical equipment that enables project facilities to operate at the technical levels of their medical professionals
- ⑦ Medical equipment for which project facilities have installed (or can secure) maintenance personnel to maintain
- ⑧ Medical equipment that corresponds to the referral system, medical needs and other facets of project facilities

The list of planed medical equipment for procurement in the Project and the specifications, purpose of use of the main medical equipment, consumable supplies and replacement parts are shown in the table from the next page.

The MOH will prepare back-up generator for Blood bank refrigerator, Laboratory refrigerator/freezer in existing clinical laboratory. Also, engineer of the MOH will maintain Bedpan washer with particular attention.

Table 2-25 Medical Equipment Plan List

Chipata Lv1H

No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty
New Facility			CP-47	Thermometer, digital	1	Consultation Room-1 (Paediatrics)		
1. Outpatient Dept.			CP-48	Stethoscope, binaural	1	CP-93	Examination Desk set	1
CP-1	Wheelchair	2	CP-49	BP machine, adult	1	CP-94	Equipment Cabinet	1
CP-2	Stretcher	2	CP-50	X-ray film viewer (Wall mounted type)	1	CP-95	Wastebin with lid	1
Consultation Room-2 (Eye / ENT)			Consultation Room-7 (Vital)			CP-96	Treatment table	1
CP-3	Diagnostic set for Eye and ENT	1	CP-51	Examination Desk set	1	CP-97	Bed-side screen	1
CP-4	Examination Desk set	1	CP-52	Equipment Cabinet	1	CP-98	Torch, medical, pen-sized	1
CP-5	Equipment Cabinet	1	CP-53	Wastebin with lid	1	CP-99	Thermometer, digital	1
CP-6	Wastebin with lid	1	CP-54	Treatment table	1	CP-100	Weighing trousers	1
CP-7	Bed-side screen	1	CP-55	Bed-side screen	1	CP-101	Salter scale	1
Consultation Room-3 (Gynaecology)			CP-56	Torch, medical, pen-sized	1	CP-102	Stethoscope, binaural	1
CP-8	Examination Desk set	1	CP-57	Thermometer, digital	1	CP-103	BP machine, child	1
CP-9	Equipment Cabinet	1	CP-58	Stethoscope, binaural	1	CP-104	Ear syringe	1
CP-10	Wastebin with lid	1	CP-59	BP machine, adult	1	CP-105	X-ray film viewer (Wall mounted type)	1
CP-11	Examination couch, gynecological	1	CP-60	X-ray film viewer (Wall mounted type)	1	Consultation Room-2 (Dentistry)		
CP-12	Bed-side screen	1	CP-61	Weighing scale, adult	2	CP-106	Bench top autoclave	1
CP-13	Examination light	1	CP-62	Chart, vision-testing, Snellen type	1	CP-107	Dental treatment unit	1
CP-14	Thermometer, digital	1	CP-63	Patella hammer	1	CP-108	Dental film processor	1
CP-15	Stethoscope, binaural	1	CP-64	Suction pump, electric	1	CP-109	Dental instrument cabinet	1
CP-16	BP machine, adult	1	CP-65	Ambu bag for adults	1	CP-110	Dental instrument set	3
CP-17	Vaginal speculum, small	2	CP-66	Ambu bag for children	1	CP-111	Dental light curing unit	1
CP-18	Vaginal speculum, medium	3	CP-67	Dressing trolley	3	CP-112	Dental treatment trolley	1
CP-19	Vaginal speculum, large	3	CP-68	Pulse oximeter, finger type	2	CP-113	Dental x-ray unit	1
CP-20	X-ray film viewer (Wall mounted type)	1	Treatment Room			CP-114	Ultrasonic dental scaler	1
Consultation Room-4			CP-69	Drainage set	3	CP-115	Lead apron	1
CP-21	Examination Desk set	1	CP-70	Dressing set	3	Pharmacy		
CP-22	Equipment Cabinet	1	CP-71	Suturing set	6	CP-116	20 ml medicine cup	1
CP-23	Wastebin with lid	1	CP-72	Instrument tray, medium	3	CP-117	Drug cabinet, lockable	1
CP-24	Treatment table	1	CP-73	Drip stand	2	CP-118	Pharmacy apparatus set	1
CP-25	Bed-side screen	1	CP-74	Treatment table	2	CP-119	Mixer	1
CP-26	Torch, medical, pen-sized	1	Ultrasonography Room			CP-120	Mortar and pestle	1
CP-27	Thermometer, digital	1	CP-75	Ultrasonic diagnostic device	1	CP-121	Pharmacy balance	1
CP-28	Stethoscope, binaural	1	CP-76	Treatment table	1	CP-122	Pharmacy heavy duty trolley	1
CP-29	BP machine, adult	1	X-Ray Room			CP-123	Pharmacy refrigerator	1
CP-30	X-ray film viewer (Wall mounted type)	1	CP-77	Actinic marker	1	CP-124	Tablet and capsule counter	1
Consultation Room-5			CP-78	Film processor, automatic	1	CP-125	Tablet counting tray	1
CP-31	Examination Desk set	1	CP-79	Lead apron	1	CP-126	Vaccine refrigerator	1
CP-32	Equipment Cabinet	1	CP-80	X-ray film viewing box (Stand type)	1	CP-127	Water distiller	1
CP-33	Wastebin with lid	1	CP-81	X-ray loading bench (Film hopper)	1	2. Operation Dept.		
CP-34	Treatment table	1	CP-82	X-ray equipment	1	Theatre		
CP-35	Bed-side screen	1	Consultation Room-1 (TB)			CP-128	Ambu bag for adults	1
CP-36	Torch, medical, pen-sized	1	CP-83	Examination Desk set	1	CP-129	Ambu bag for children	1
CP-37	Thermometer, digital	1	CP-84	Equipment Cabinet	1	CP-130	Anesthetic machine	1
CP-38	Stethoscope, binaural	1	CP-85	Wastebin with lid	1	CP-131	BP machine, adult	2
CP-39	BP machine, adult	1	CP-86	Treatment table	1	CP-132	Bucket, stainless steel with cover	4
CP-40	X-ray film viewer (Wall mounted type)	1	CP-87	Bed-side screen	1	CP-133	Electro surgical unit	1
Consultation Room-6			CP-88	Torch, medical, pen-sized	1	CP-134	Drip stand	2
CP-41	Examination Desk set	1	CP-89	Thermometer, digital	1	CP-135	Medical cabinet	1
CP-42	Equipment Cabinet	1	CP-90	Stethoscope, binaural	1	CP-136	Footstool, one-step	2
CP-43	Wastebin with lid	1	CP-91	BP machine, adult	1	CP-137	Laryngoscope set	1
CP-44	Treatment table	1	CP-92	X-ray film viewer (Wall mounted type)	1	CP-138	Equipment Cabinet	1
CP-45	Bed-side screen	1				CP-139	Mayo table	2
CP-46	Torch, medical, pen-sized	1				CP-140	Operating stools, revolving	2

No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty
CP-141	Operating-room light, fixed, ceiling mounted	2	CP-183	Bed-side cabinet, hospital model	1	CP-222	Ambu bag for adults	1
CP-142	Operating-room light, portable, with stand	2		4. Maternity Dept.		CP-223	Ambu bag for children	1
CP-143	Oxygen concentrator	2		Nurse Station		CP-224	Diagnostic set	1
CP-144	Stretcher	2	CP-184	Equipment Cabinet	1	CP-225	X-Ray film viewing box (Stand type)	1
CP-145	Recovery bed	2	CP-185	Wastebin with lid	1		6. Ward (Except Obstetrics Ward)	
CP-146	Stethoscope, fetal, Pinard	1		Treatment Room			Nurse Station	
CP-147	Vital signs monitor, portable	2	CP-186	Examination couch, gynecological	1	CP-226	Equipment Cabinet	1
CP-148	X-Ray film viewing box (Stand type)	1	CP-187	Footstool, one-step	1	CP-227	Wastebin with lid	1
CP-149	Medicine refrigerator	1	CP-188	Examination light	1		Ward	
CP-150	Suction pump, electric	2	CP-189	Traube	1	CP-228	Hospital bed (Adult)	5
CP-151	Set, amputation	3	CP-190	Vaginal speculum, small	2	CP-229	Bed pan	1
CP-152	Set, bilateral tubal ligation	3	CP-191	Vaginal speculum, medium	3	CP-230	Excretion care set	1
CP-153	Set, caesarian section	6	CP-192	Vaginal speculum, large	3	CP-231	Thermometer, digital	2
CP-154	Set, hysterectomy	1		Pre-natal Room		CP-232	Weighing scale, adult	1
CP-155	Set, dilatation and curettage Set (D+C set)	3	CP-193	Hospital bed (Adult)	16	CP-233	Stethoscope, binaural	2
CP-156	Set, laparotomy	3		Delivery Room		CP-234	BP machine, adult	2
CP-157	Set, minor surgery	3	CP-194	Instrument Cabinet	1	CP-235	BP machine, child	1
	Sterilization Room / Sluice Room		CP-195	Instrument trolley	2	CP-236	Glucometer	2
CP-158	Autoclave, electric, 400 liters	1	CP-196	Drip stand	4	CP-237	Medicine trolley	1
CP-159	Bed pan washer	1	CP-197	Footstool, one-step	4	CP-238	Dressing tray, medium	1
CP-160	Sterilizing drum, large	4	CP-198	Operating stool, revolving	4	CP-239	Dressing trolley	1
CP-161	Sterilizing drum, medium	4	CP-199	Vaginal delivery/episiotomy set	5	CP-240	Dressing set	3
	3. Surgical Ward (Caesarean)		CP-200	Kick-about bowl	4	CP-241	Drip stand	6
	Nurse Station		CP-201	Manual vacuum aspiration (MVA) kit	5	CP-242	Oxygen concentrator	2
CP-162	Equipment Cabinet	1	CP-202	Vacuum extractor, electrical	2	CP-243	Suction pump, electric	1
CP-163	Wastebin with lid	1	CP-203	Weighing scale, infant, beam type	1	CP-244	Pulse oximeter, finger type	2
	Treatment Room		CP-204	Suction pump, electric	2		7. Laboratory Dept.	
CP-164	Vaginal speculum, small	2	CP-205	BP machine, adult	1	CP-245	Anaerobic jar	1
CP-165	Vaginal speculum, medium	3	CP-206	Transport Incubator	1	CP-246	Analytical balance	1
CP-166	Vaginal speculum, large	3	CP-207	Ultrasonic diagnostic device (Mobile type)	1	CP-247	Autoclave for laboratory, medium	1
CP-167	Thermometer, digital	2		Post-natal Room		CP-248	Blood bank refrigerator	1
CP-168	Salter scale	1	CP-208	Hospital bed (Adult)	8	CP-249	Bunsen burner	1
CP-169	Weighing trousers	1	CP-209	Bed pan	1	CP-250	Differential counter	1
CP-170	BP machine, adult	1		Premature Infant Room		CP-251	Flammable liquid cabinet	1
CP-171	Glucometer	1	CP-210	Infant warmer	3	CP-252	Hot air oven	1
CP-172	Instrument tray, large	1		Existing Facility		CP-253	Hot plate, controlled temperature	1
CP-173	Dressing tray, medium	1		5. Casualty		CP-254	Laboratory incubator, medium	1
CP-174	Dressing trolley	1	CP-211	Wheelchair	1	CP-255	Laboratory refrigerator/freezer	1
CP-175	Dressing set	2	CP-212	Stretcher	1	CP-256	Microhaematocrit centrifuge	1
CP-176	Treatment table	1	CP-213	Hospital bed (Adult)	3	CP-257	Micropipettes, automated	1
	Ward		CP-214	Hospital bed cradle	1	CP-258	pH meter	1
CP-177	Hospital bed (Adult)	8	CP-215	Bed-side screen	2	CP-259	Roller/mixer	1
CP-178	Bed-side cabinet, hospital model	8	CP-216	Over-bed table	1	CP-260	Timer	1
CP-179	Drip stand	4	CP-217	Bed pan	1	CP-261	Water bath	1
CP-180	Infant cot	3	CP-218	Excretion care set	1	CP-262	Water distiller	1
CP-181	X-ray equipment (Mobile type)	1	CP-219	Drip stand	4		8. Maintenance	
	Side Ward		CP-220	Oxygen concentrator	1	CP-263	Maintenance Set	1
CP-182	Hospital bed (Adult)	1	CP-221	Suction pump, electric	1			

Kanyama Lv1H

No.	Equipment Name	Plan Qty	No.	Equipment Name	Plan Qty	No.	Equipment Name	Plan Qty
New Facility			K-49	X-ray film viewer (Wall mounted type)	1	K-97	Mixer	1
1. Outpatient Dept.			Consultation Room-5			K-98	Mortar and pestle	1
K-1	Wheelchair	2	K-50	Examination Desk set	1	K-99	Pharmacy balance	1
K-2	Stretcher	2	K-51	Equipment Cabinet	1	K-100	Pharmacy heavy duty trolley	1
Consultation Room-1 (Vital)			K-52	Wastebin with lid	1	K-101	Pharmacy refrigerator	1
K-3	Examination Desk set	1	K-53	Treatment table	1	K-102	Tablet and capsule counter	1
K-4	Equipment Cabinet	1	K-54	Bed-side screen	1	K-103	Tablet counting tray	1
K-5	Wastebin with lid	1	K-55	Torch, medical, pen-sized	1	K-104	Vaccine refrigerator	1
K-6	Treatment table	1	K-56	Thermometer, digital	1	K-105	Water distiller	1
K-7	Bed-side screen	1	K-57	Stethoscope, binaural	1	Laboratory		
K-8	Torch, medical, pen-sized	1	K-58	BP machine, adult	1	K-106	Anaerobic jar	1
K-9	Thermometer, digital	1	K-59	X-ray film viewer (Wall mounted type)	1	K-107	Analytical balance	1
K-10	Stethoscope, binaural	1	Consultation Room-6 (Gynaecology)			K-108	Autoclave for laboratory, medium	1
K-11	BP machine, adult	1	K-60	Examination Desk set	1	K-109	Binocular microscope	1
K-12	X-ray film viewer (Wall mounted type)	1	K-61	Equipment Cabinet	1	K-110	Blood bank refrigerator	1
K-13	Weighing scale, adult	2	K-62	Wastebin with lid	1	K-111	Bunsen burner	1
K-14	Chart, vision-testing, Snellen type	1	K-63	Examination couch, gynecological	1	K-112	Centrifuge, small	1
K-15	Patella hammer	1	K-64	Bed-side screen	1	K-113	Differential counter	1
K-16	Suction pump, electric	1	K-65	Examination light	1	K-114	Flammable liquid cabinet	1
K-17	Resuscitation bag set	1	K-66	Thermometer, digital	1	K-115	Hot air oven	1
K-18	Medicine trolley	3	K-67	Stethoscope, binaural	1	K-116	Hot plate, controlled temperature	1
K-19	Pulse oximeter, finger type	2	K-68	BP machine, adult	1	K-117	Laboratory incubator, medium	1
Consultation Room-2			K-69	X-ray film viewer (Wall mounted type)	1	K-118	Laboratory refrigerator/freezer	1
K-20	Examination Desk set	1	K-70	Vaginal speculum, small	2	K-119	Microhaematocrit centrifuge	1
K-21	Equipment Cabinet	1	K-71	Vaginal speculum, medium	3	K-120	Micropipettes, automated	1
K-22	Wastebin with lid	1	K-72	Vaginal speculum, large	3	K-121	pH meter	1
K-23	Treatment table	1	Consultation Room-7 (Eye / ENT)			K-122	Roller/mixer	1
K-24	Bed-side screen	1	K-73	Diagnostic set for Eye and ENT	1	K-123	Timer	1
K-25	Torch, medical, pen-sized	1	K-74	Examination Desk set	1	K-124	Water bath	1
K-26	Thermometer, digital	1	K-75	Equipment Cabinet	1	K-125	Water distiller	1
K-27	Stethoscope, binaural	1	K-76	Wastebin with lid	1	Ultrasonography Room		
K-28	BP machine, adult	1	K-77	Bed-side screen	1	K-126	Ultrasonic diagnostic device	1
K-29	X-ray film viewer (Wall mounted type)	1	Consultation Room-8 (Dentistry)			K-127	Treatment table	1
Consultation Room-3			K-78	Bench top autoclave	1	X-ray Room		
K-30	Examination Desk set	1	K-79	Dental treatment unit	1	K-128	Actinic marker	1
K-31	Equipment Cabinet	1	K-80	Dental film processor	1	K-129	Film processor, automatic	1
K-32	Wastebin with lid	1	K-81	Dental instrument cabinet	1	K-130	Lead apron	1
K-33	Treatment table	1	K-82	Dental instrument set	3	K-131	X-Ray film viewing box (Stand type)	1
K-34	Bed-side screen	1	K-83	Dental light curing unit	1	K-132	X-Ray loading bench (Film hopper)	1
K-35	Torch, medical, pen-sized	1	K-84	Dental treatment trolley	1	K-133	X-ray equipment	1
K-36	Thermometer, digital	1	K-85	Dental x-ray unit	1	Consultation Room-1 (Paediatrics)		
K-37	Stethoscope, binaural	1	K-86	Ultrasonic dental scaler	1	K-134	Examination Desk set	1
K-38	BP machine, adult	1	K-87	Lead apron	1	K-135	Equipment Cabinet	1
K-39	X-ray film viewer (Wall mounted type)	1	Treatment Room			K-136	Wastebin with lid	1
Consultation Room-4			K-88	Drainage set	3	K-137	Treatment table	1
K-40	Examination Desk set	1	K-89	Dressing set	3	K-138	Bed-side screen	1
K-41	Equipment Cabinet	1	K-90	Suturing set	3	K-139	Torch, medical, pen-sized	1
K-42	Wastebin with lid	1	K-91	Instrument tray, medium	3	K-140	Thermometer, digital	1
K-43	Treatment table	1	K-92	Drip stand	2	K-141	Stethoscope, binaural	1
K-44	Bed-side screen	1	K-93	Treatment table	2	K-142	BP machine, child	1
K-45	Torch, medical, pen-sized	1	Pharmacy			K-143	X-ray film viewer (Wall mounted type)	1
K-46	Thermometer, digital	1	K-94	20 ml medicine cup	1	K-144	Salter scale	1
K-47	Stethoscope, binaural	1	K-95	Drug cabinet, lockable	1	K-145	Weighing trousers	1
K-48	BP machine, adult	1	K-96	Graduated glass measure	1	K-146	Ear syringe	1

No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty
K-147	Resuscitation bag set	1	K-195	Wastebin with lid	1		6. Medical Ward (Male)	
	Consultation Room-2 (TB)			Pre-natal Room			Nurse Station	
K-148	Examination Desk set	1	K-196	Hospital bed (Adult)	20	K-237	Instrument Cabinet	1
K-149	Equipment Cabinet	1		4. Surgical Ward (Caesarean)		K-238	Wastebin with lid	1
K-150	Wastebin with lid	1		Nurse Station			Ward	
K-151	Treatment table	1	K-197	Instrument Cabinet	1	K-239	Hospital bed (Adult)	21
K-152	Bed-side screen	1	K-198	Wastebin with lid	1	K-240	Excretion care set	1
K-153	Torch, medical, pen-sized	1		Treatment Room		K-241	Drip stand	10
K-154	Thermometer, digital	1	K-199	Vaginal speculum, small	1		Side Ward	
K-155	Stethoscope, binaural	1	K-200	Vaginal speculum, medium	2	K-242	Hospital bed (Adult)	1
K-156	BP machine, adult	1	K-201	Vaginal speculum, large	2	K-243	Bed-side cabinet, hospital model	1
K-157	X-ray film viewer (Wall mounted type)	1	K-202	Thermometer, digital	2		Treatment Room	
	2. Operation Dept.		K-203	Thermometer	2	K-244	Treatment table	1
	Theatre		K-204	Salter scale	1	K-245	Thermometer, digital	2
K-158	Ambu bag for adults	1	K-205	Weighing trousers	1	K-246	Weighing scale, adult	1
K-159	Ambu bag for children	1	K-206	BP machine, adult	1	K-247	Stethoscope, binaural	2
K-160	Anesthetic machine	1	K-207	Glucometer	1	K-248	BP machine, adult	2
K-161	BP machine, adult	2	K-208	Medicine trolley	1	K-249	Glucometer	2
K-162	Bucket, stainless steel with cover	4	K-209	Dressing tray, medium	1	K-250	Drip stand	1
K-163	Electro surgical unit	1	K-210	Dressing trolley	1	K-251	Oxygen concentrator	2
K-164	Drip stand	2	K-211	Dressing set	2	K-252	Suction pump, electric	1
K-165	Medical Cabinet	1	K-212	Treatment table	1	K-253	Pulse oximeter, finger type	2
K-166	Footstool, one-step	2		Ward		K-254	Dressing trolley	1
K-167	Laryngoscope set	1	K-213	Drip stand	6		Existing facility	
K-168	Equipment Cabinet	1	K-214	Hospital bed (Adult)	12		7. Casualty	
K-169	Mayo table	2	K-215	Bed-side cabinet, hospital model	12	K-255	Wheelchair	1
K-170	Infant warmer	1	K-216	Infant cot	4	K-256	Stretcher	1
K-171	Operating stools, revolving	2	K-217	X-ray equipment (Mobile type)	1	K-257	Hospital bed (Adult)	3
K-172	Operating-room light, fixed, ceiling mounted	2		Side Ward		K-258	Hospital bed cradle	1
K-173	Operating-room light, portable, with stand	2	K-218	Hospital bed (Adult)	1	K-259	Bed-side screen	2
K-174	Oxygen concentrator	2	K-219	Bed-side cabinet, hospital model	1	K-260	Over-bed table	1
K-175	Stretcher	2		5. Medical Ward (Female)		K-261	Excretion care set	1
K-176	Pulse oximeter, separate	2		Nurse Station		K-262	Drip stand	4
K-177	Recovery bed	2	K-220	Equipment Cabinet	1	K-263	Oxygen concentrator	1
K-178	Stethoscope, binaural	1	K-221	Wastebin with lid	1	K-264	Suction pump, electric	1
K-179	Vital signs monitor, portable	2		Ward		K-265	Ambu bag for adults	1
K-180	X-Ray film viewing box (Stand type)	1	K-222	Hospital bed (Adult)	21	K-266	Ambu bag for children	1
K-181	Medicine refrigerator	1	K-223	Drip stand	10	K-267	Diagnostic set	1
K-182	Suction pump, electric	2		Side Ward		K-268	X-Ray film viewing box (Stand type)	1
K-183	Set, amputation	3	K-224	Hospital bed (Adult)	1		8. Ward (Paediatrics)	
K-184	Set, bilateral tubal ligation	3	K-225	Bed-side cabinet, hospital model	1	K-269	Hospital bed cradle	4
K-185	Set, caesarian section	6		Treatment Room		K-270	BP machine, child	1
K-186	Set, hysterectomy	1	K-226	Treatment table	1		9. Delivery	
K-187	Set, dilatation and curettage (D+C set)	3	K-227	Thermometer, digital	2	K-271	Examination couch, gynecological	1
K-188	Set, laparotomy	3	K-228	Weighing scale, adult	1	K-272	Footstool, one-step	1
K-189	Set, minor surgery	3	K-229	Stethoscope, binaural	2	K-273	Examination light	1
	Sterilization Room / Sluice Room		K-230	BP machine, adult	2	K-274	Traube	1
K-190	Autoclave, electric, 400 liters	1	K-231	Glucometer	2	K-275	Vaginal speculum, small	2
K-191	Bed pan washer	1	K-232	Drip stand	1	K-276	Vaginal speculum, medium	3
K-192	Sterilizing drum, large	4	K-233	Oxygen concentrator	2	K-277	Vaginal speculum, large	3
K-193	Sterilizing drum, medium	4	K-234	Suction pump, electric	1	K-278	Ultrasonic diagnostic device (Mobile type)	1
	3. Maternity Dept. (Pre-natal Room)		K-235	Pulse oximeter, finger type	2		10. Maintenance	
	Nurse Station		K-236	Dressing trolley	1	K-279	Maintenance Set	1
K-194	Instrument Cabinet	1						

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No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty
New Facility			CW-47	Treatment table	1	CW-94	Suturing set	3
1. Outpatient Dept.			CW-48	Bed-side screen	1	CW-95	Instrument tray, medium	3
CW-1	Wheelchair	2	CW-49	Torch, medical, pen-sized	1	CW-96	Drip stand	1
CW-2	Stretcher	2	CW-50	Thermometer, digital	1	CW-97	Treatment table	2
Consultation Room-1 (Dentistry)			CW-51	Stethoscope, binaural	1	Pharmacy		
CW-3	Bench top autoclave	1	CW-52	BP machine, adult	1	CW-98	20 ml medicine cup	1
CW-4	Dental treatment unit	1	CW-53	X-ray film viewer (Wall mounted type)	1	CW-99	Dnug cabinet, lockable	1
CW-5	Dental film processor	1	Consultation Room-5			CW-100	Pharmacy apparatus set	1
CW-6	Dental instrument cabinet	1	CW-54	Examination Desk set	1	CW-101	Mixer	1
CW-7	Dental instrument set	3	CW-55	Equipment Cabinet	1	CW-102	Mortar and pestle	1
CW-8	Dental light curing unit	1	CW-56	Wastebin with lid	1	CW-103	Pharmacy balance	1
CW-9	Dental treatment trolley	1	CW-57	Treatment table	1	CW-104	Pharmacy heavy duty trolley	1
CW-10	Dental x-ray unit	1	CW-58	Bed-side screen	1	CW-105	Pharmacy refrigerator	1
CW-11	Ultrasonic dental scaler	1	CW-59	Torch, medical, pen-sized	1	CW-106	Tablet and capsule counter	1
CW-12	Lead apron	1	CW-60	Thermometer, digital	1	CW-107	Tablet counting tray	1
Consultation Room-2 (Paediatrics)			CW-61	Stethoscope, binaural	1	CW-108	Vaccine refrigerator	1
CW-13	Examination Desk set	1	CW-62	BP machine, adult	1	CW-109	Water distiller	1
CW-14	Equipment Cabinet	1	CW-63	X-ray film viewer (Wall mounted type)	1	Ultrasonography Room		
CW-15	Wastebin with lid	1	Consultation Room-6			CW-110	Ultrasonic diagnostic device	1
CW-16	Treatment table	1	CW-64	Examination Desk set	1	CW-111	Treatment table	1
CW-17	Bed-side screen	1	CW-65	Equipment Cabinet	1	X-ray Room		
CW-18	Torch, medical, pen-sized	1	CW-66	Wastebin with lid	1	CW-112	Actinic marker	1
CW-19	Thermometer, digital	1	CW-67	Treatment table	1	CW-113	Film processor, automatic	1
CW-20	Salter scale	1	CW-68	Bed-side screen	1	CW-114	Lead apron	1
CW-21	Weighing trousers	1	CW-69	Torch, medical, pen-sized	1	CW-115	X-Ray film viewing box (Stand type)	1
CW-22	Stethoscope, binaural	1	CW-70	Thermometer, digital	1	CW-116	X-Ray loading bench (Film hopper)	1
CW-23	BP machine, child	1	CW-71	Stethoscope, binaural	1	CW-117	X-ray equipment	1
CW-24	Ear syringe	1	CW-72	BP machine, adult	1	2. Operation Dept.		
CW-25	Ambu bag for children	1	CW-73	X-ray film viewer (Wall mounted type)	1	Theatre		
CW-26	X-ray film viewer (Wall mounted type)	1	Consultation Room-7 (Gynaecology)			CW-118	Ambu bag for adults	1
Consultation Room-3 (Vital)			CW-74	Examination Desk set	1	CW-119	Ambu bag for children	1
CW-27	Examination Desk set	1	CW-75	Equipment Cabinet	1	CW-120	Anesthetic machine	1
CW-28	Equipment Cabinet	1	CW-76	Wastebin with lid	1	CW-121	BP machine, adult	2
CW-29	Wastebin with lid	1	CW-77	Examination couch, gynecological	1	CW-122	Bucket, stainless steel with cover	4
CW-30	Treatment table	1	CW-78	Bed-side screen	1	CW-123	Electro surgical unit	1
CW-31	Bed-side screen	1	CW-79	Examination light	1	CW-124	Drip stand	2
CW-32	Torch, medical, pen-sized	1	CW-80	Thermometer, digital	1	CW-125	Dangerous drugs, cabinet	1
CW-33	Thermometer, digital	1	CW-81	Stethoscope, binaural	1	CW-126	Footstool, one-step	2
CW-34	Weighing scale, adult	2	CW-82	BP machine, adult	1	CW-127	Laryngoscope set	1
CW-35	Stethoscope, binaural	1	CW-83	Vaginal speculum, small	2	CW-128	Instrument Cabinet	1
CW-36	BP machine, adult	1	CW-84	Vaginal speculum, medium	3	CW-129	Mayo table	2
CW-37	Chart, vision-testing, Snellen type	1	CW-85	Vaginal speculum, large	3	CW-130	Operating stools, revolving	2
CW-38	Patella hammer	1	CW-86	X-ray film viewer (Wall mounted type)	1	CW-131	Operating-room light, fixed, ceiling mounted	2
CW-39	Suction pump, electric	1	Consultation Room-8 (Eye / ENT)			CW-132	Operating-room light, portable, with stand	2
CW-40	Ambu bag for adults	1	CW-87	Diagnostic set for Eye and ENT	1	CW-133	Oxygen concentrator	2
CW-41	Medicine trolley	3	CW-88	Examination Desk set	1	CW-134	Stretcher	2
CW-42	Pulse oximeter, finger type	2	CW-89	Equipment Cabinet	1	CW-135	Pulse oximeter, separate	2
CW-43	X-ray film viewer (Wall mounted type)	1	CW-90	Wastebin with lid	1	CW-136	Recovery bed	2
Consultation Room-4			CW-91	Bed-side screen	1	CW-137	Stethoscope, binaural	1
CW-44	Examination Desk set	1	Treatment Room			CW-138	Vital signs monitor, portable	2
CW-45	Equipment Cabinet	1	CW-92	Drainage set	3	CW-139	X-Ray film viewing box (Stand type)	1
CW-46	Wastebin with lid	1	CW-93	Dressing set	3	CW-140	Medicine refrigerator	1

No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty	No.	Equipment Name	Plan Q'ty
CW-141	Suction pump, electric	2	CW-186	Stationary bike	2	CW-229	Operating stool, revolving	2
CW-142	Set, amputation	3	CW-187	Wave therapy	1	CW-230	Vaginal delivery/episiotomy set	5
CW-143	Set, bilateral tubal ligation	3		5. Outpatient Dept. (TB)		CW-231	Kick-about bowl	2
CW-144	Set, caesarian section	6		Consultation Room-1 (TB)		CW-232	Manual vacuum aspiration (MVA) kit	5
CW-145	Set, hysterectomy	1	CW-188	Examination Desk set	1	CW-233	Vacuum extractor, electrical	1
CW-146	Set, dilatation and curettage Set (D+C set)	3	CW-189	Equipment Cabinet	1	CW-234	Weighing scale, infant, beam type	1
CW-147	Set, laparotomy	3	CW-190	Wastebin with lid	1	CW-235	Suction pump, electric	1
CW-148	Set, minor surgery	3	CW-191	Treatment table	1	CW-236	BP machine, adult	1
	Sterilization Room/Sluice Room		CW-192	Bed-side screen	1	CW-237	Ultrasonic diagnostic device (Mobile type)	1
CW-149	Autoclave, electric, 400 liters	1	CW-193	Torch, medical, pen-sized	1		Post-natal Room	
CW-150	Bed pan washer	1	CW-194	Thermometer, digital	1	CW-238	Bed pan	1
CW-151	Sterilizing drum, large	4	CW-195	Stethoscope, binaural	1		8. Casualty	
CW-152	Sterilizing drum, medium	4	CW-196	BP machine, adult	1	CW-239	Wheelchair	1
	3. Surgical Ward (Caesarean)		CW-197	X-ray film viewer (Wall mounted type)	1	CW-240	Stretcher	1
	Nurse Station			Existing facility		CW-241	Hospital bed (Adult)	3
CW-153	Equipment Cabinet	1		6. Medical Ward		CW-242	Hospital bed cradle	1
CW-154	Wastebin with lid	1		Nurse Station		CW-243	Bed-side screen	2
	Treatment Room		CW-198	Equipment Cabinet	1	CW-244	Over-bed table	1
CW-155	Vaginal speculum, small	1	CW-199	Wastebin with lid	1	CW-245	Bed pan	1
CW-156	Vaginal speculum, medium	2		Ward		CW-246	Excretion care set	1
CW-157	Vaginal speculum, large	2	CW-200	Bed pan	1	CW-247	Drip stand	4
CW-158	Dressing tray, medium	1	CW-201	Excretion care set	1	CW-248	Oxygen concentrator	1
CW-159	Dressing trolley	1	CW-202	Thermometer, digital	2	CW-249	Suction pump, electric	1
CW-160	Dressing set	2	CW-203	Weighing scale, adult	1	CW-250	Ambu bag for adults	1
CW-161	Treatment table	1	CW-204	Stethoscope, binaural	2	CW-251	Ambu bag for children	1
	Ward		CW-205	BP machine, adult	2	CW-252	Diagnostic set	1
CW-162	Thermometer, digital	2	CW-206	BP machine, child	1	CW-253	X-Ray film viewing box (Stand type)	1
CW-163	Salter scale	1	CW-207	Glucometer	2		9. Laboratory Dept.	
CW-164	Weighing trousers	1	CW-208	Medicine trolley	1	CW-254	Anaerobic jar	1
CW-165	BP machine, adult	1	CW-209	Dressing tray, medium	1	CW-255	Analytical balance	1
CW-166	Glucometer	1	CW-210	Dressing trolley	1	CW-256	Autoclave for laboratory, medium	1
CW-167	Medicine trolley	1	CW-211	Dressing set	3	CW-257	Binocular microscope	1
CW-168	Drip stand	4	CW-212	Drip stand	6	CW-258	Blood bank refrigerator	1
CW-169	Hospital bed (Adult)	7	CW-213	Oxygen concentrator	2	CW-259	Bunsen burner	1
CW-170	Bed-side cabinet, hospital model	7	CW-214	Suction pump, electric	1	CW-260	Centrifuge, small	1
CW-171	Infant cot	2	CW-215	Pulse oximeter, finger type	2	CW-261	Differential counter	1
CW-172	X-ray equipment (Mobile type)	1		7. Maternity Dept.		CW-262	Flammable liquid cabinet	1
	Side Ward			Nurse Station		CW-263	Hot air oven	1
CW-173	Hospital bed (Adult)	1	CW-216	Equipment Cabinet	1	CW-264	Hot plate, controlled temperature	1
CW-174	Bed-side cabinet, hospital model	1	CW-217	Wastebin with lid	1	CW-265	Laboratory incubator, medium	1
	4. Physiotherapy Dept.			Pre-natal Room		CW-266	Laboratory refrigerator/freezer	1
	Physiotherapy Room		CW-218	Examination couch, gynecological	1	CW-267	Microhaematocrit centrifuge	1
CW-175	Therapeutic Ultrasound Machine	2	CW-219	Footstool, one-step	1	CW-268	Micropipettes, automated	1
CW-176	Infra-red Irradiation Machine	2	CW-220	Examination light	1	CW-269	pH meter	1
CW-177	Short wave diathermy	1	CW-221	Traube	1	CW-270	Roller/mixer	1
CW-178	Infra red, Lumber sacral	1	CW-222	Vaginal speculum, small	2	CW-271	Timer	1
CW-179	Quadriceps Bench	1	CW-223	Vaginal speculum, medium	3	CW-272	Water bath	1
CW-180	Treadmill Machine	2	CW-224	Vaginal speculum, large	3	CW-273	Water distiller	1
CW-181	Ultraviolet, Limp	2		Delivery Room			10. Maintenance	
CW-182	Treatment couch	3	CW-225	Instrument Cabinet	1	CW-274	Maintenance Set	1
CW-183	Elliptical	2	CW-226	Instrument trolley	2			
CW-184	Electrical Cervical/Lumber traction	2	CW-227	Drip stand	4			
CW-185	Gathre Smith suspension	1	CW-228	Footstool, one-step	4			

Table 2-26 Major Specifications of Major Medical Equipment

Name	Total Quantity	Major specifications
Transport incubator	1	Type: for loading on ambulance car with battery, Lifting cart approx. 55 x 120 cm, Treatment window 1 each at right and left sides, 2 at the front, skin sound sensor • IV pole, oxygen cylinder with cart, temperature control
Anesthetic machine	3	Oxygen flow rate: 0.1-10.0 L/min, Laughing gas flowrate: 0.1-10.0L/min, air flow rate: 0.1 - 10.0L/min, Alarm: oxygen concentration, oxygen supply pressure, power failure, equipment abnormal, ventilation quantity etc. vaporizer: halothane, with canister, with bellows or electric ventilator
Electro surgical unit	6	Output board: For both of Mono polar and bi-polar, Function: Cut, coagulation, bi-polar, Plate electrode with foot switch and scalpel tip
Operating-room light, fixed, ceiling mounted	6	Type: Ceiling mount parent-child type, Main light 7 lamps + sub light 4 lamps, LED Light source, total approx. 240,000 Lux
Operating-room light, portable, with stand	6	Type: Mobile, LED Light source approx. 100,000 Lux or more
Vital signs monitor, portable	6	Colour LCD Monitor 12" or greater, Parameter: cardiogram, respiration curve, SpO2, NIBP, Body temperature, display more than 6 waveforms, with printer incorporated
Autoclave, electric, 400 liters	3	Type: Electric steam generator built-in, Disinfection capacity: 400L or more, with steam generator, disinfection temperature range approx. 121°C, 134°C, with water softener
Dental treatment unit	3	Electric hydraulic pedal elevation, air motor and hand pieces 2 types, 3 types syringe, vacuum, film viewer supplied, with water softener
Dental X-ray unit	3	Tube voltage: higher than 60 kV, Tube current: 6 - 8mA, Protection against electric shock: Class I
Blood bank refrigerator	3	Capacity: greater than 300 L, Temperature range 4°C-6°C Temperature recorder built-in, with various alarm function
Ultrasonic diagnostic device	3	Display monitor: 15" monochrome LCD monitor, Display mode : B mode, B/B mode, B/M mode, supplied with convex and linear probe
X-ray equipment	3	Tube voltage: 40-150KV (1KV interval), Tube current: 10-630mA, mAs: 0.50-630mAs Table size: 2100 x 850mm or greater
X-ray equipment (Mobile type)	3	Tube voltage: 40-150kV, Tube current: Max. 500mA or more mAs: 0.2-630mAs, Battery built-in type
Ultrasonic diagnostic device (Mobile type)	3	Display monitor: 15 "monochrome LCD monitor, display mode: B mode, B / B mode, B / M mode, zoom, CF, PD, PW, CW, Duplex, range: 0-24 cm, battery included, convex probe included

(2) Consumable Supplies and Replacement Parts

Since there are no medical equipment engineers in each facility as of the time of the preparatory survey, staff in charge of equipment in the DHO performs maintenance and repair of medical equipment. Lusaka district is divided into five zones for maintenance and repair of medical equipment, and two medical equipment technicians are working for maintenance and repair at each zone under the DHO.

Spare parts are not stored at each facility. The DHO purchases the required spare parts to repair equipment at each facility when they are required. Consumable supplies for each facility are stored in a warehouse of the DHO in Chilenje as well as the workshop where malfunctioning equipment is taken for repairs.

Note that the Project calls for three months' worth of consumable supplies and replacement parts required immediately after medical equipment procurement.

After one-year warranty period, the MOH and local agent will conclude one-year supplementary maintenance contract for the following equipment. Contents of the supplemental maintenance contract are that local agent engineer shall be dispatched free of charge up to three times and the parts shall be replaced at the cost basis. However, the tube of X-ray equipment shall be replaced free of charge during the supplemental maintenance contract period, and tube should be replaced just before expiry of the contract period.

Equipment covered by one-year supplementary maintenance contract

- X-ray equipment
- X-ray equipment (Mobile type)
- Anesthetic machine
- Ultrasonic diagnostic device
- Ultrasonic diagnostic device (Mobile type)

2-2-3 Outline Design Drawing

Table 2-27 List of Drawings

Chipata Lv1H

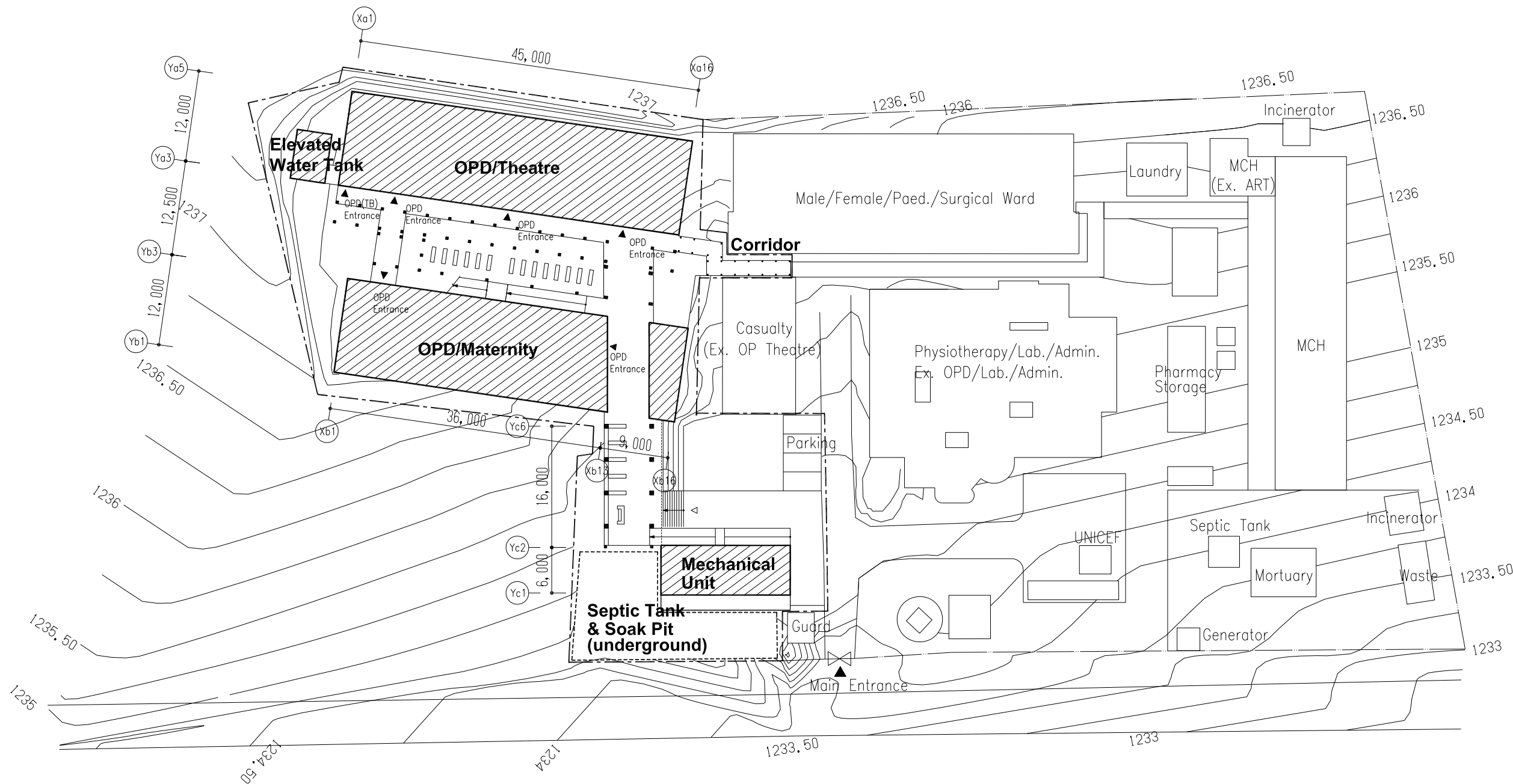
	Facility Name	Drawing Items	Scale	Page
1	All Buildings	Master Plan	1/600	101
2	OPD/Theatre, OPD/Maternity, Mechanical Unit	Roof Plans	1/300	103
3	OPD/Theatre, OPD/Maternity, Mechanical Unit	GFL and 1FL Plan	1/300	105
4	OPD/Theatre, OPD/Maternity, Mechanical Unit	Section	1/300	107
5	OPD/Theatre, OPD/Maternity, Mechanical Unit	Elevation	1/300	109

Kanyama Lv1H


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2	Theatre/Laboratory, OPD/Ward	Roof Plans	1/300	113
3	Theatre/Laboratory, OPD/Ward	GFL and 1FL Plan	1/300	115
4	Theatre/Laboratory, OPD/Ward	Section	1/300	117
5	Theatre/Laboratory, OPD/Ward	Elevation	1/300	119

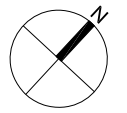
Chawama Lv1H

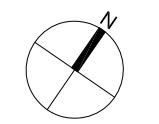
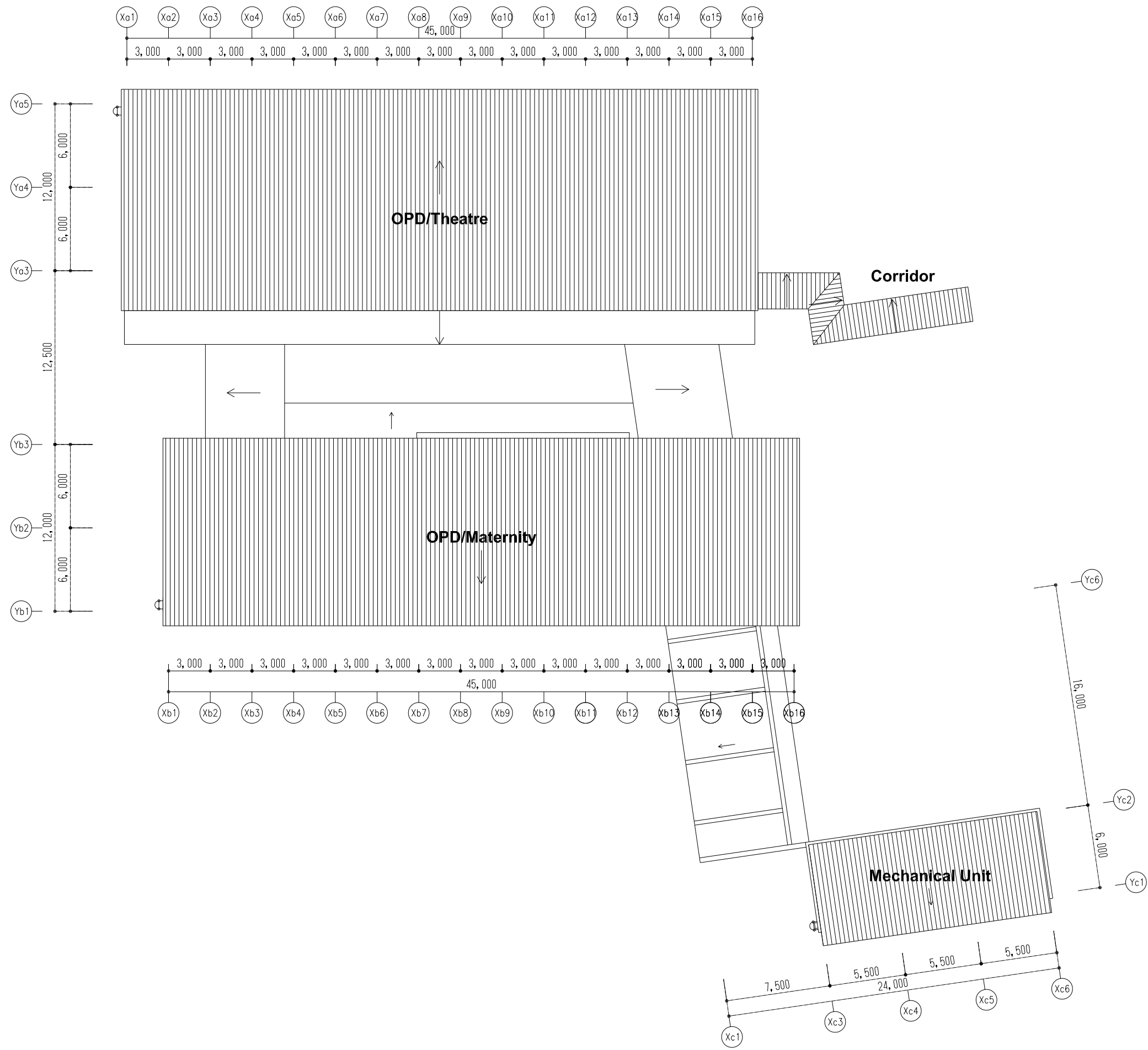
	Facility Name	Drawing Items	Scale	Page
1	All Buildings	Master Plan	1/600	121
2	OPD/Theatre, OPD/Physiotherapy	Roof Plans	1/300	123
3	OPD/Theatre, OPD/Physiotherapy	GFL and 1FL Plan	1/300	125
4	OPD/Theatre, OPD/Physiotherapy	Section	1/300	127
5	OPD/Theatre, OPD/Physiotherapy	Elevation	1/300	129

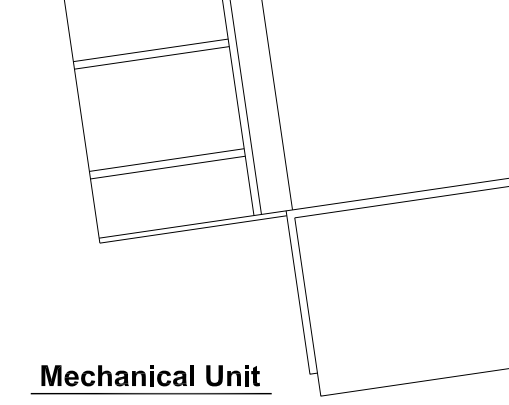
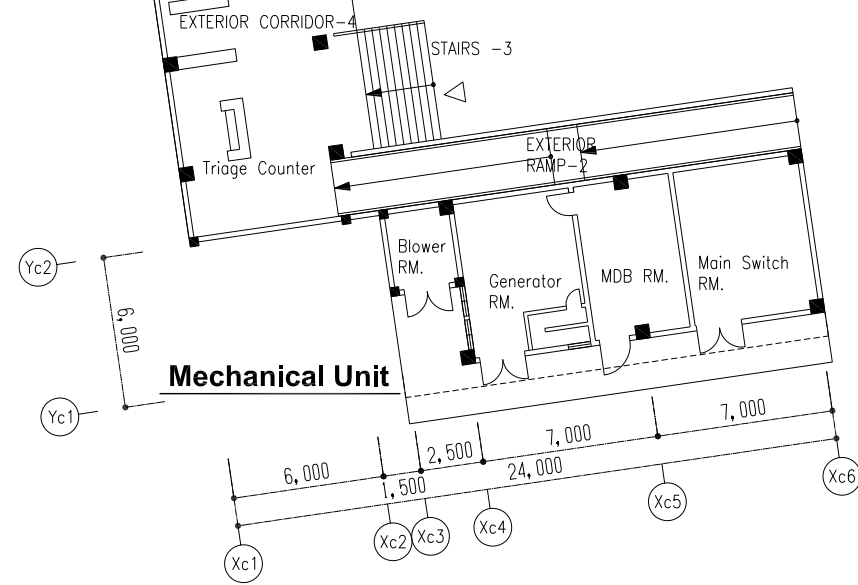
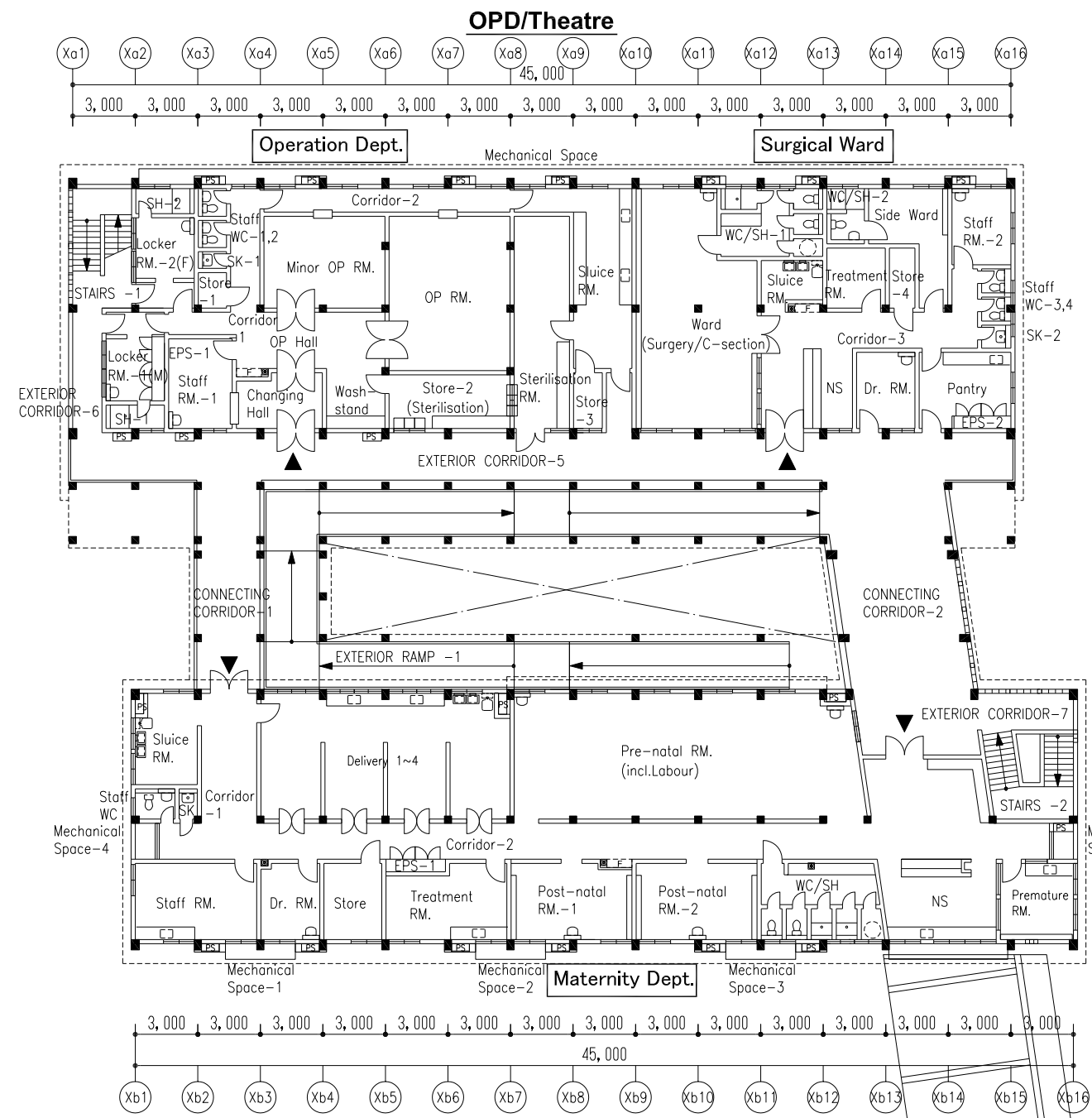
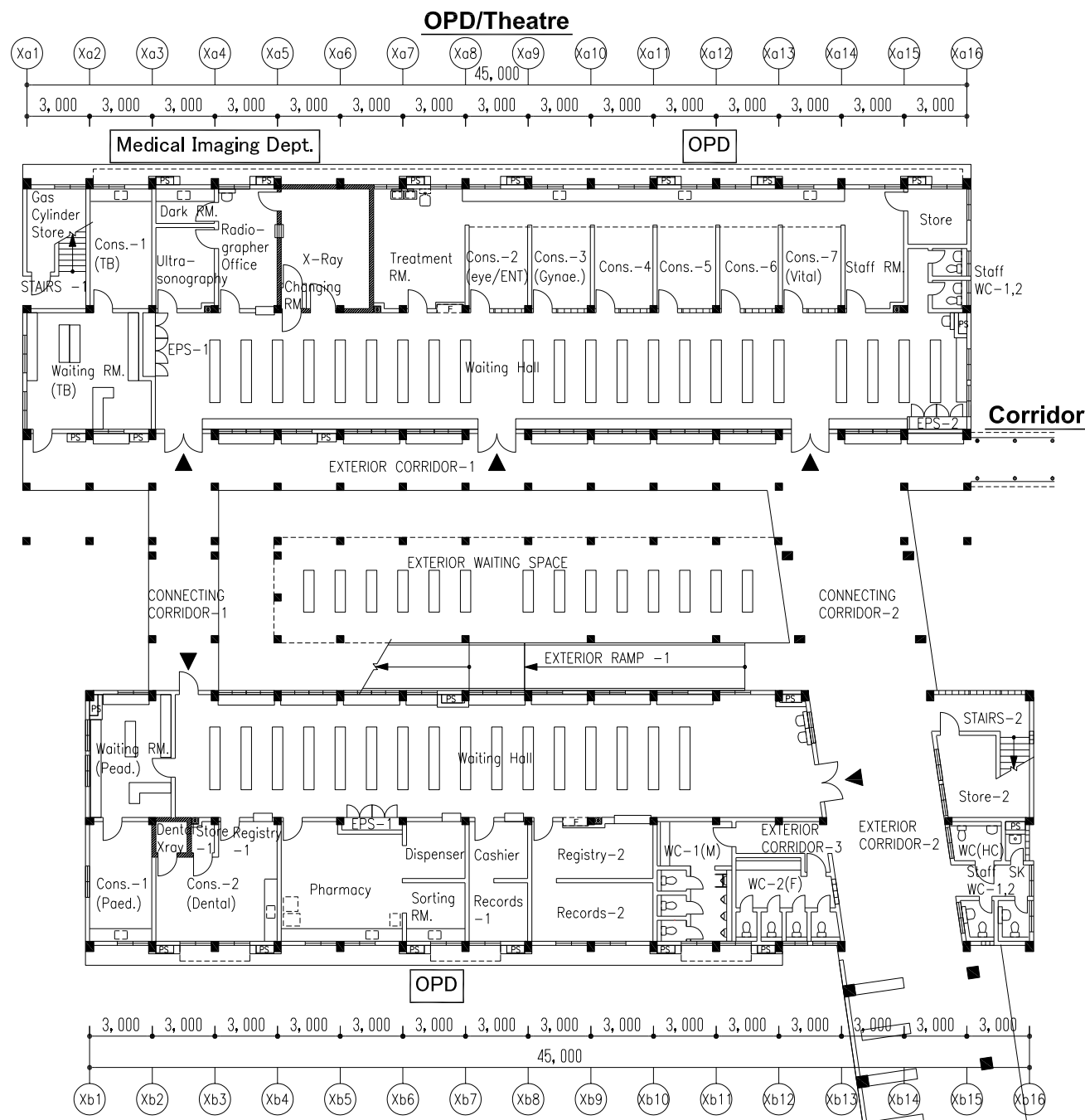


-LEGEND-

-  FACILITIES CONSTRUCTED BY JAPANESE SIDE
-  CONSTRUCTION AREA

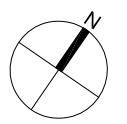


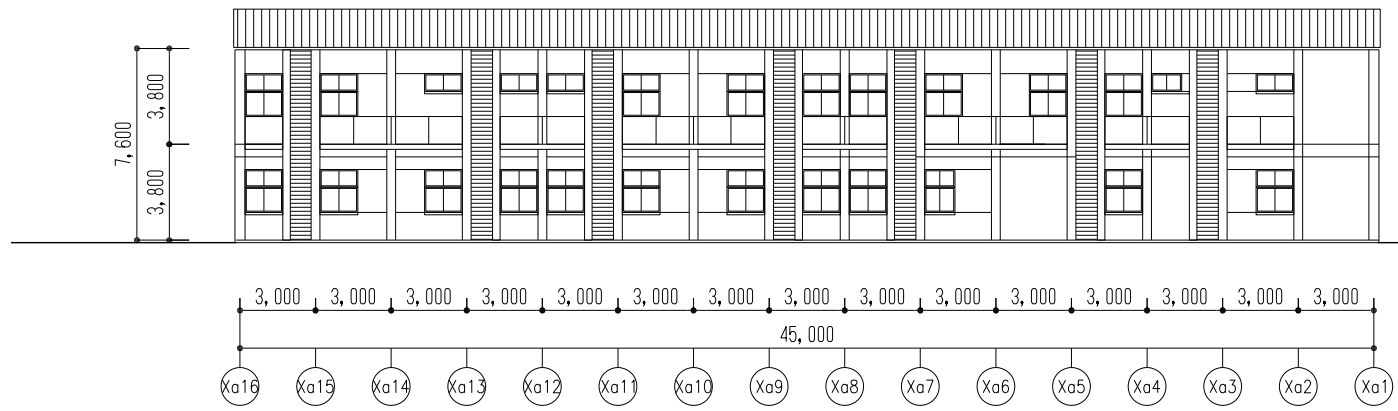




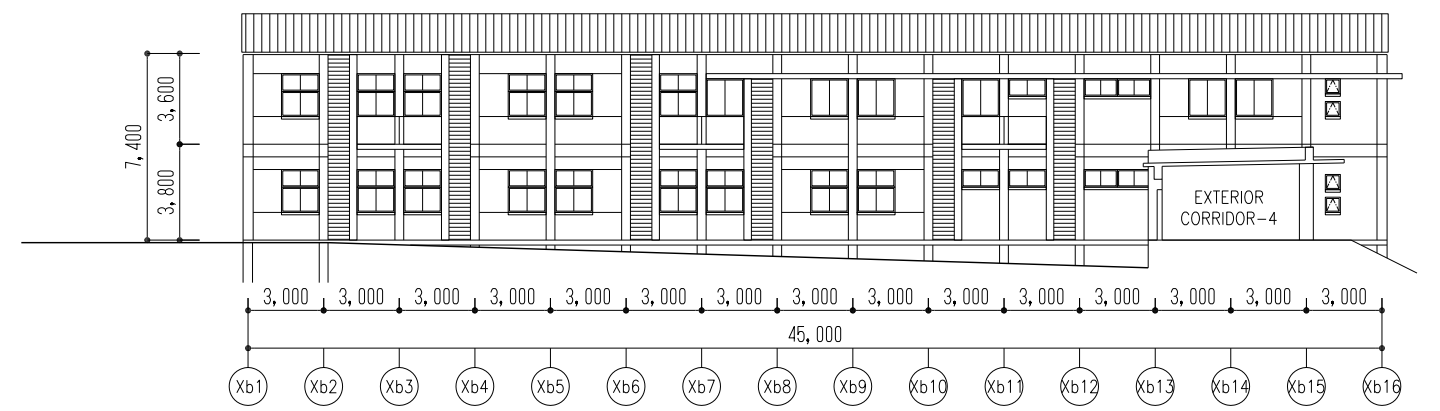
Ground Floor Plan

First Floor Plan

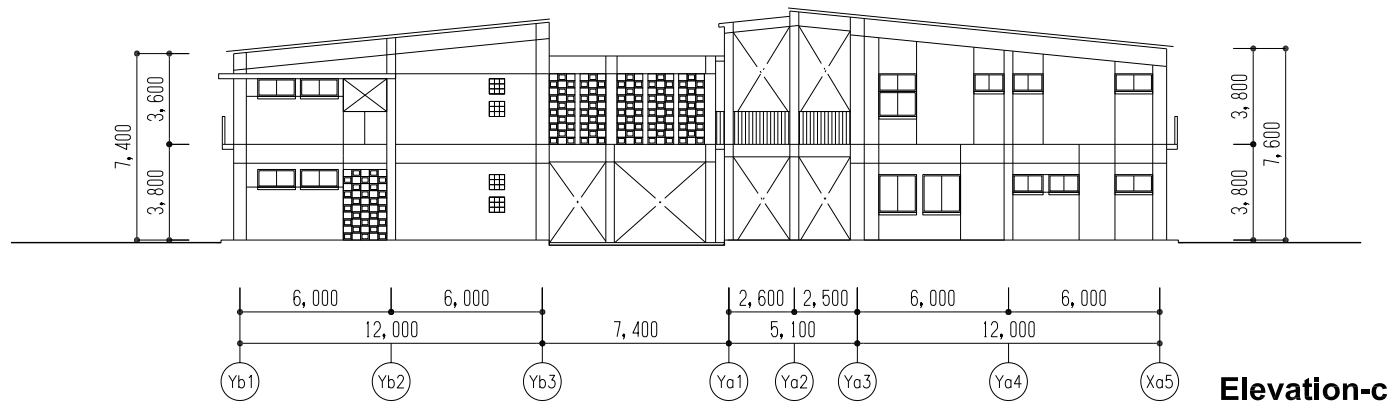




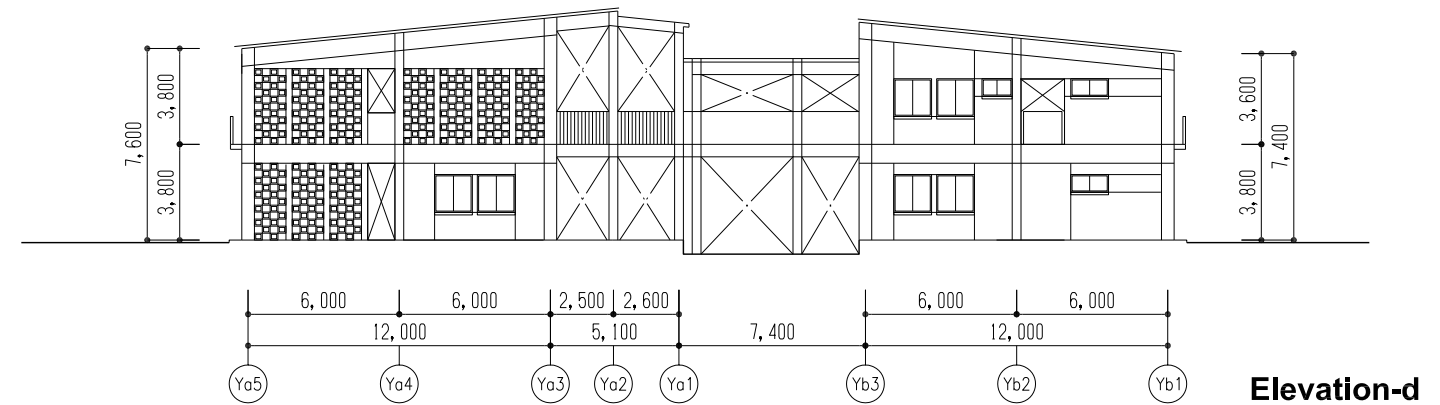
Elevation-a



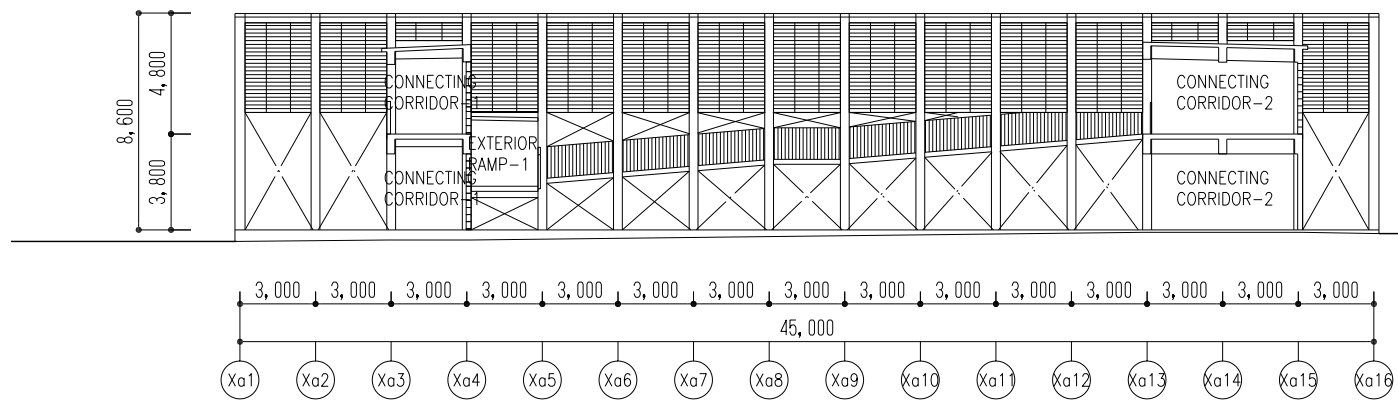
Elevation-b



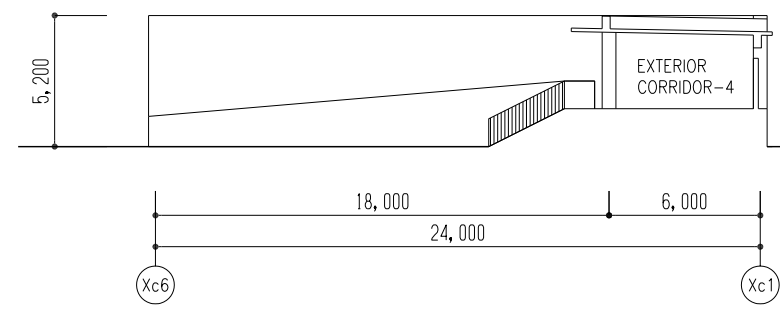
Elevation-c



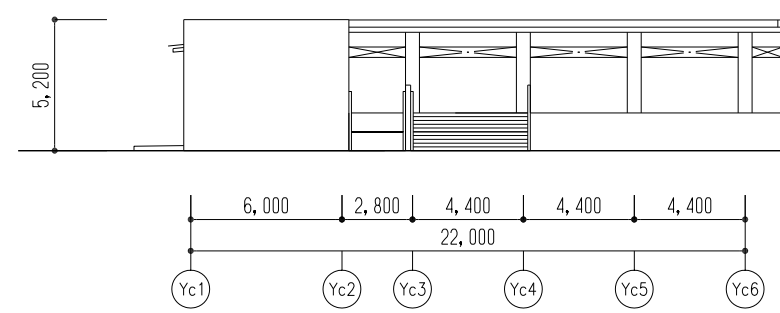
Elevation-d



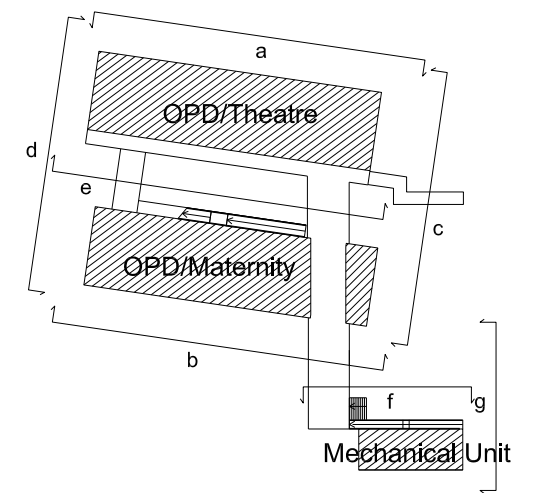
Elevation-e

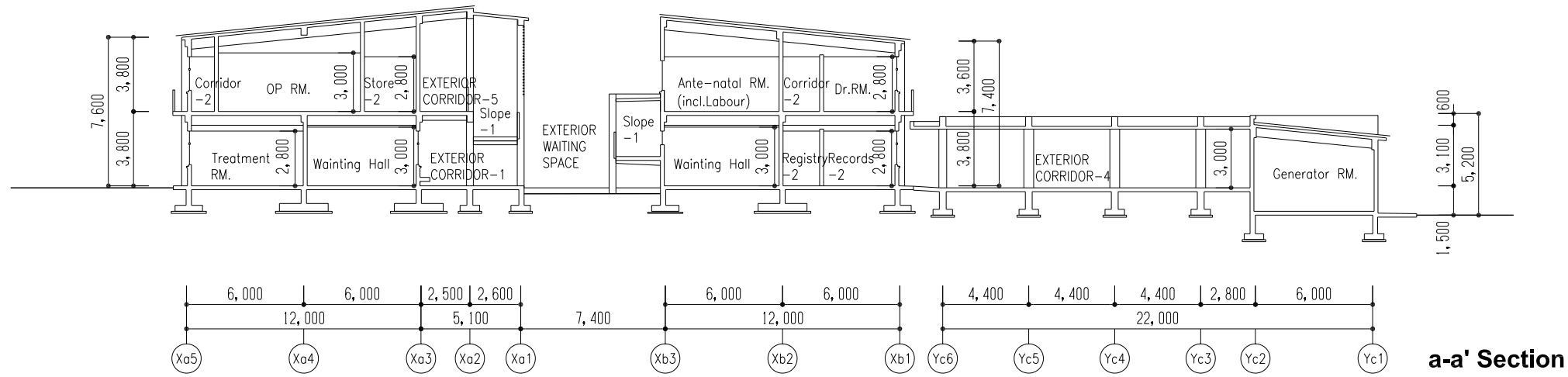


Elevation-f

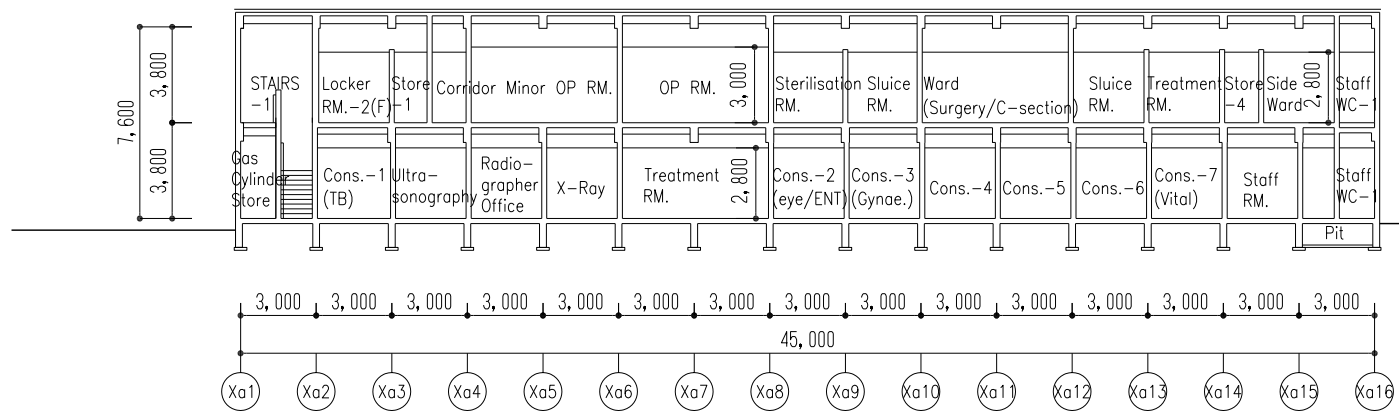


Elevation-g

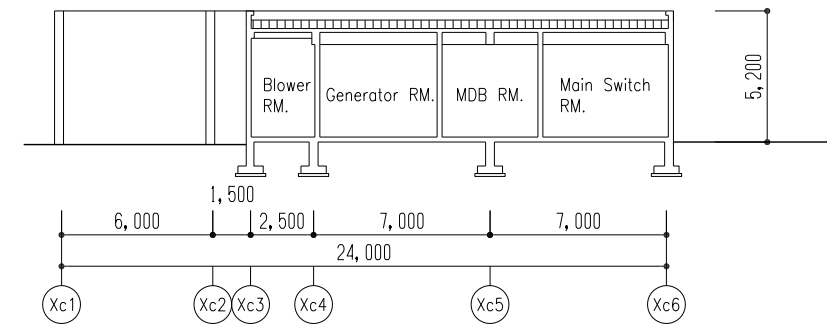




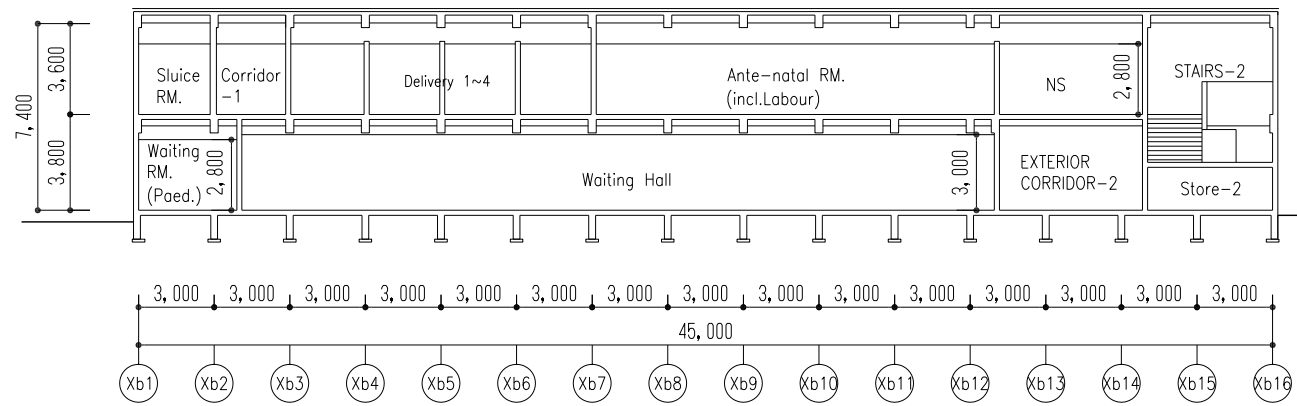
a-a' Section



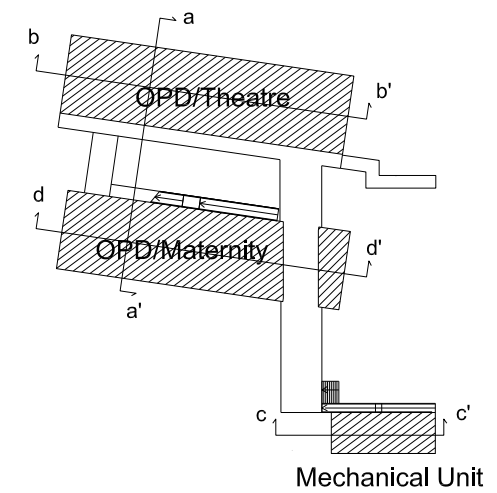
b-b' Section



c-c' Section

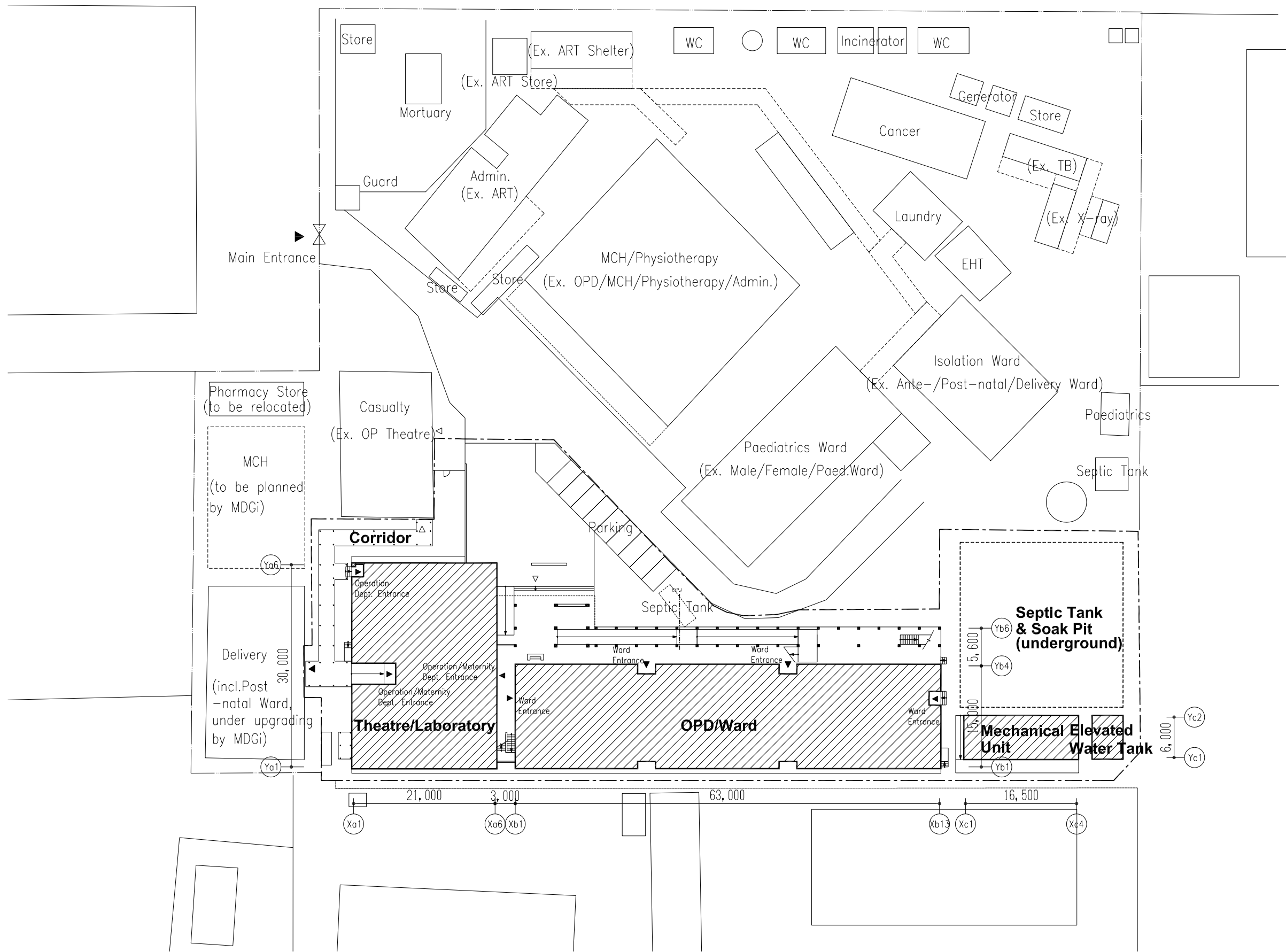


d-d' Section



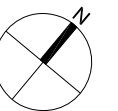
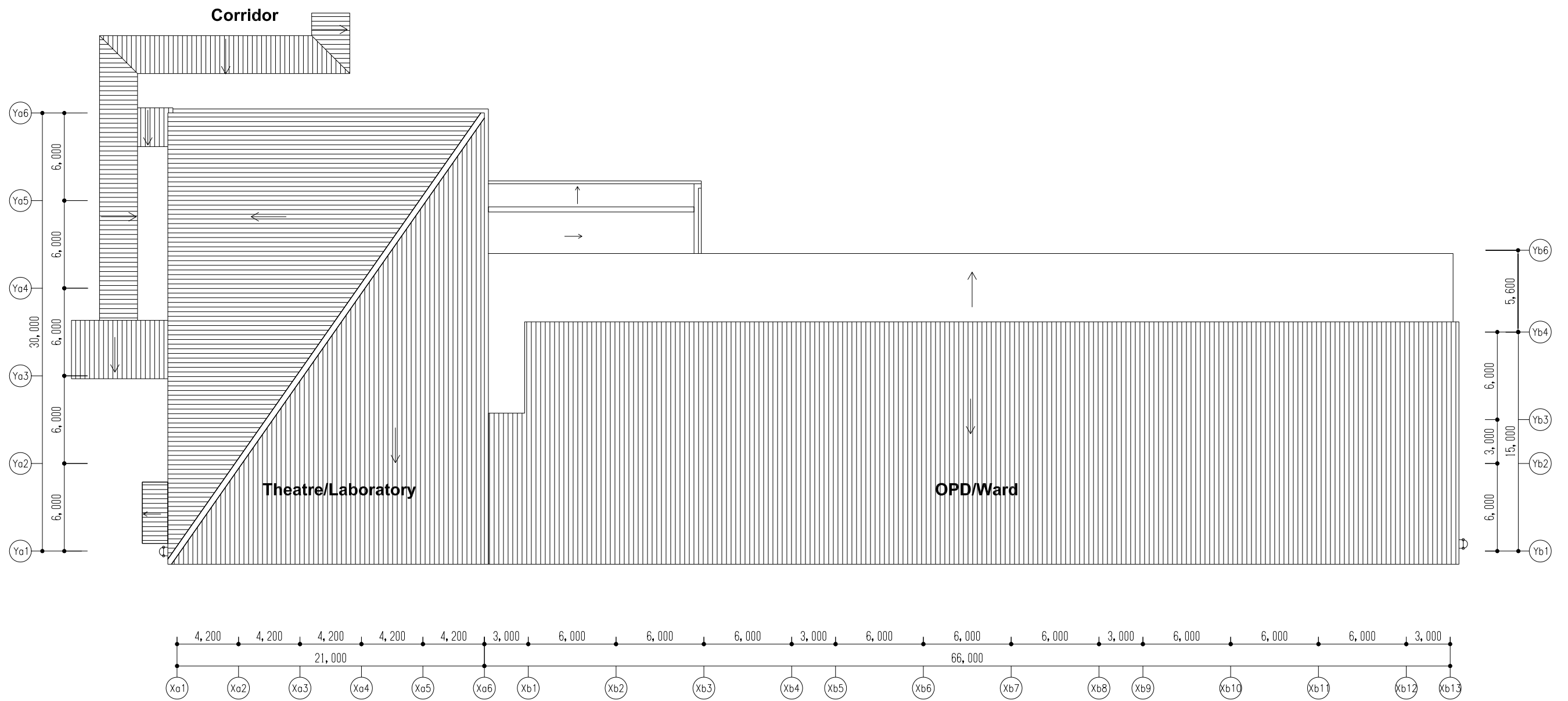
Mechanical Unit

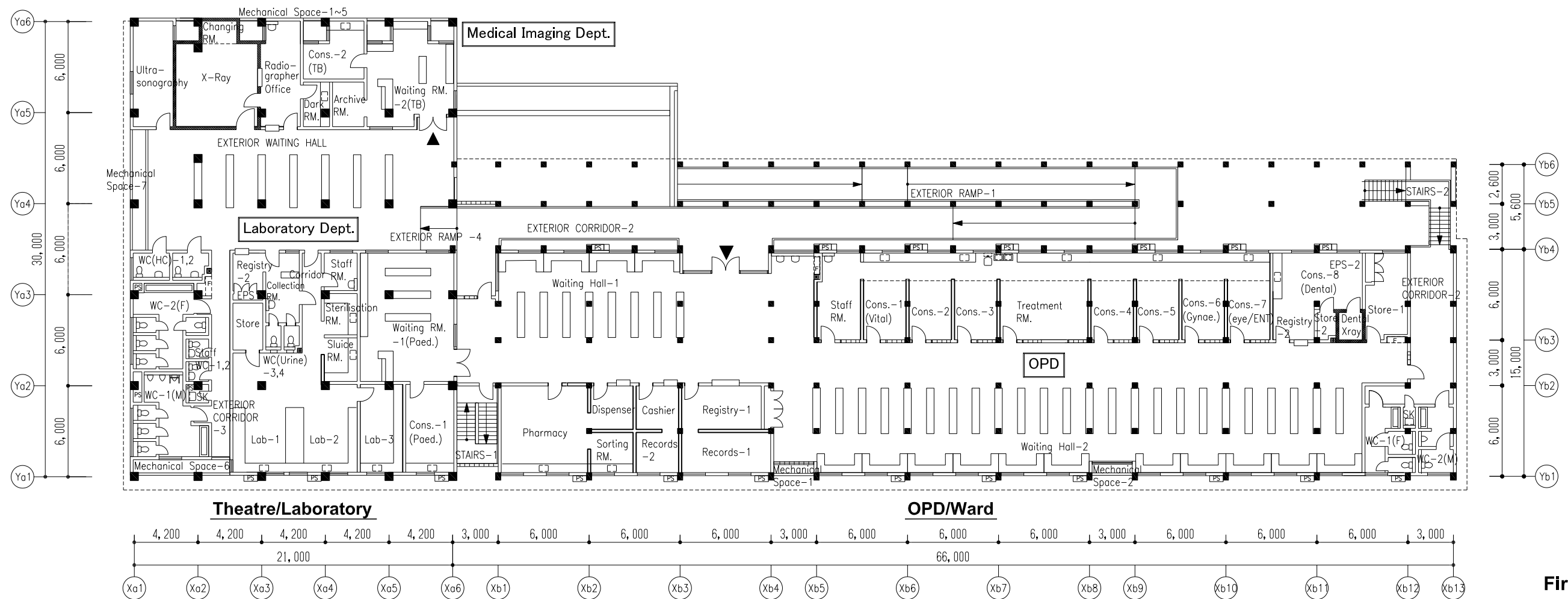
	CHIPATA LEVEL 1 HOSPITAL	SECTION
		A3: 1/300



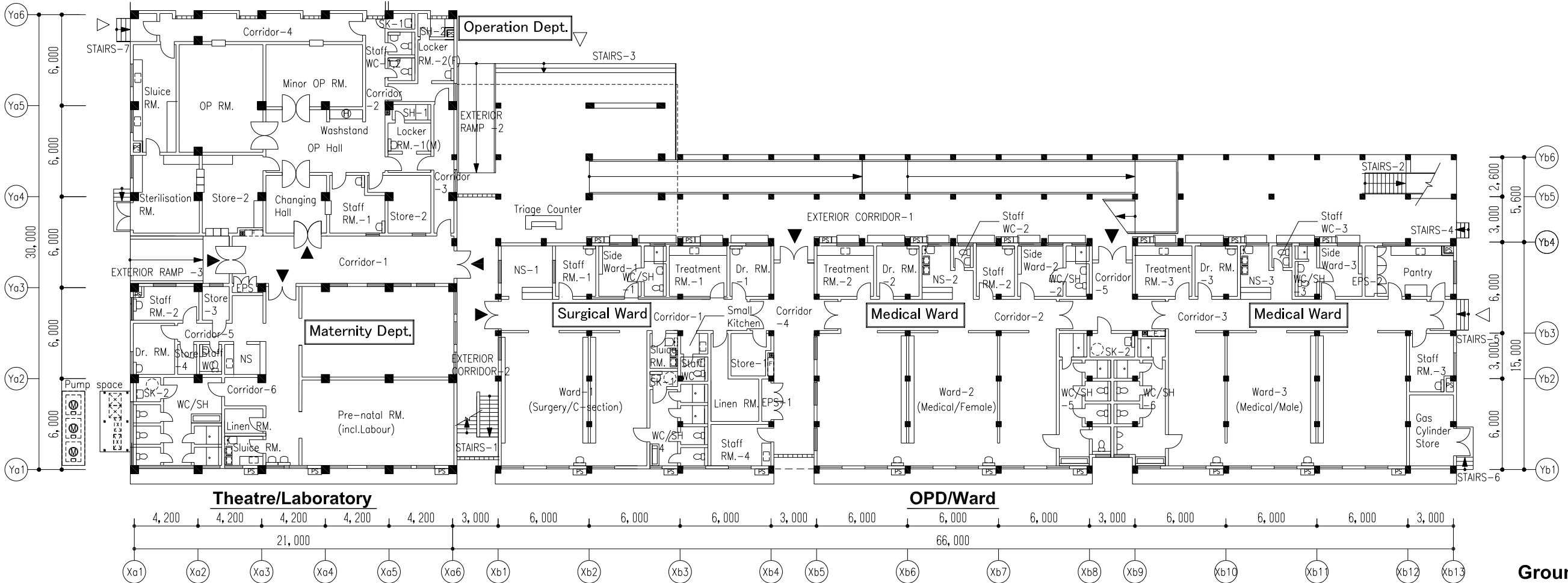
-LEGEND-

- FACILITIES CONSTRUCTED BY JAPANESE SIDE
- CONSTRUCTION AREA

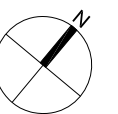


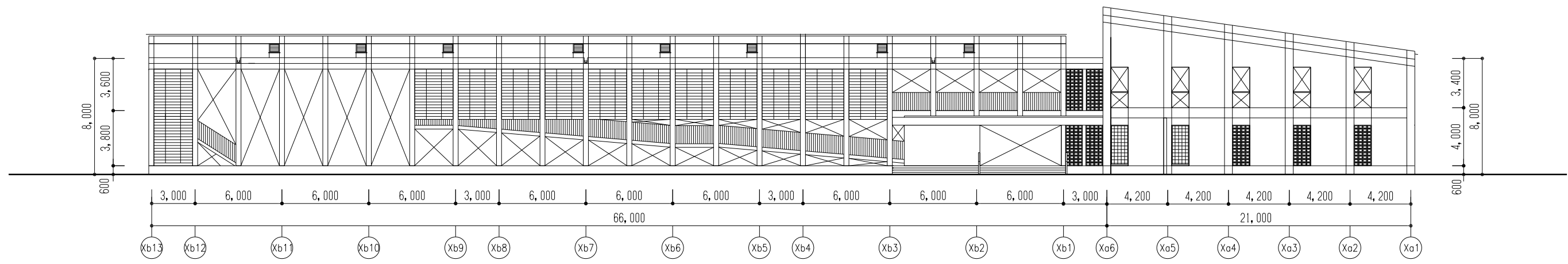


First Floor Plan



Ground Floor Plan

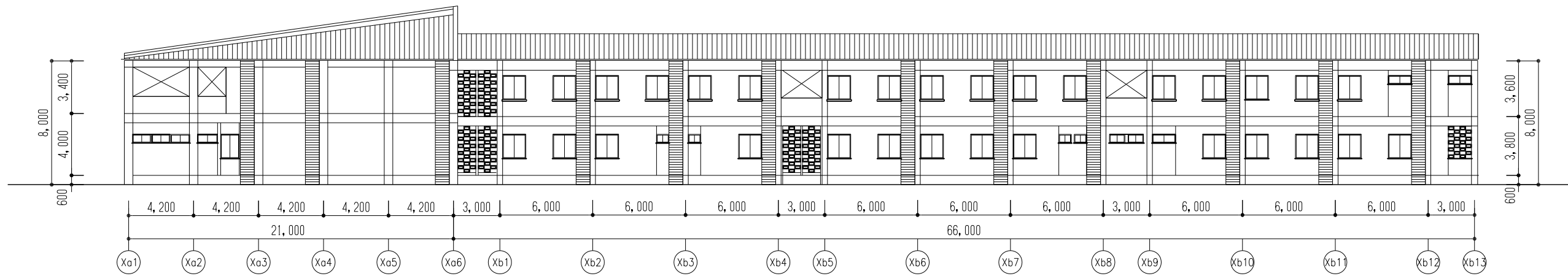




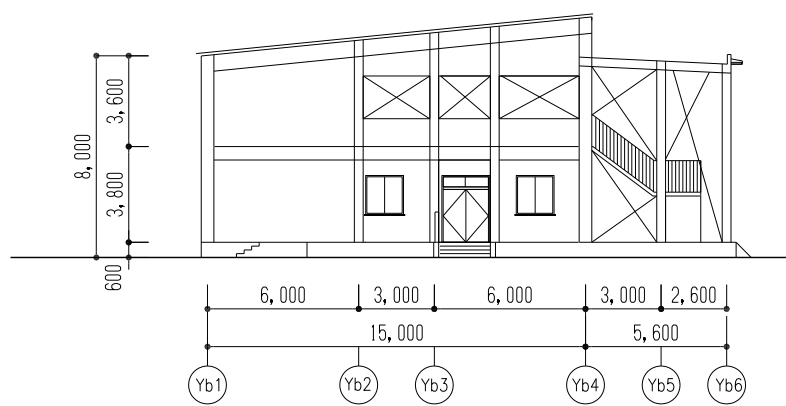
Elevation-a



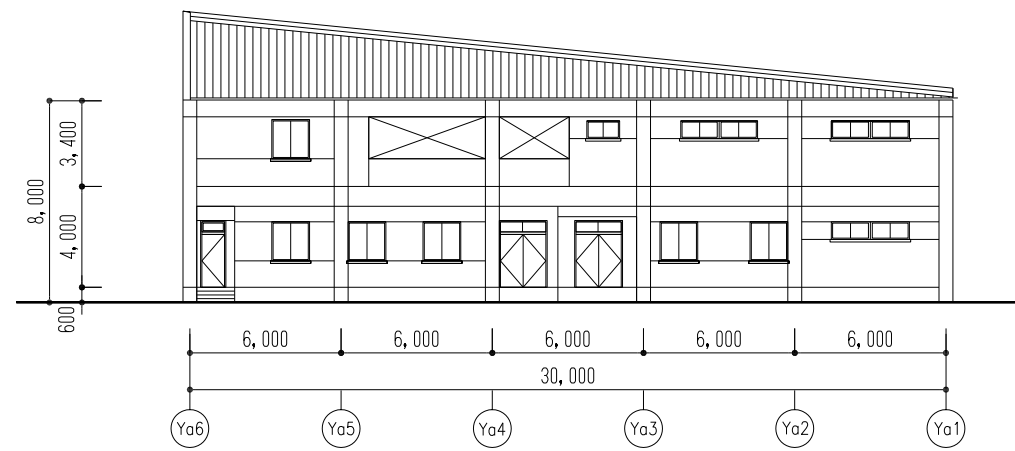
Elevation-a'



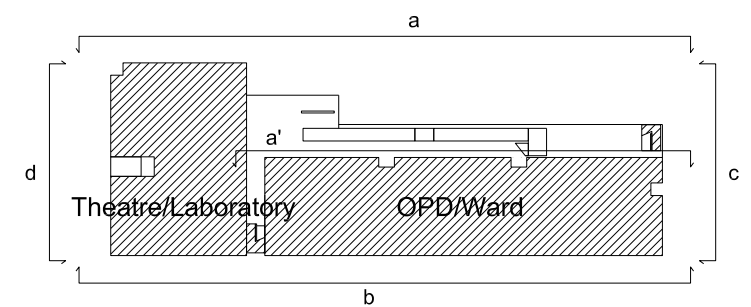
Elevation-b



Elevation-c



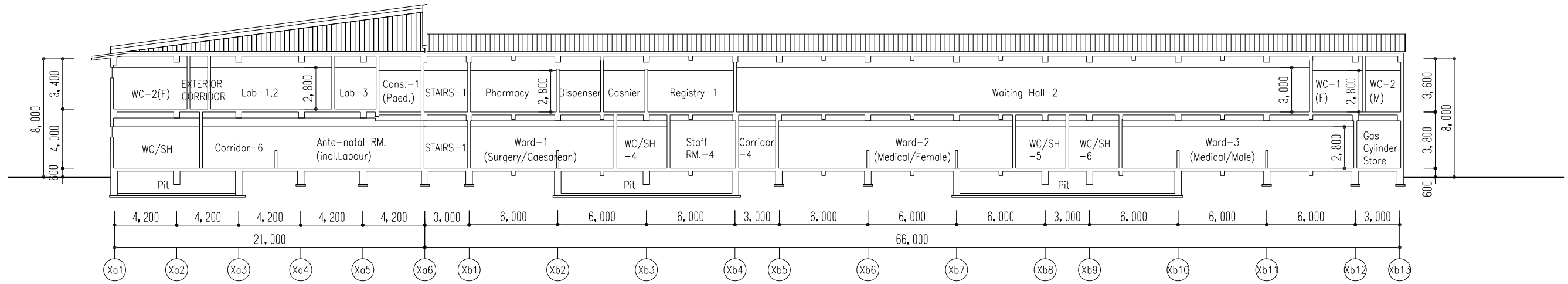
Elevation-d



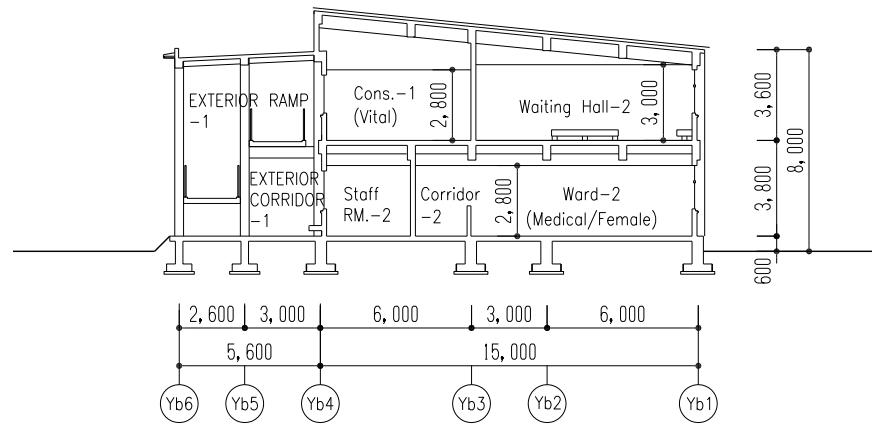
KANYAMA LEVEL 1 HOSPITAL

ELEVATION

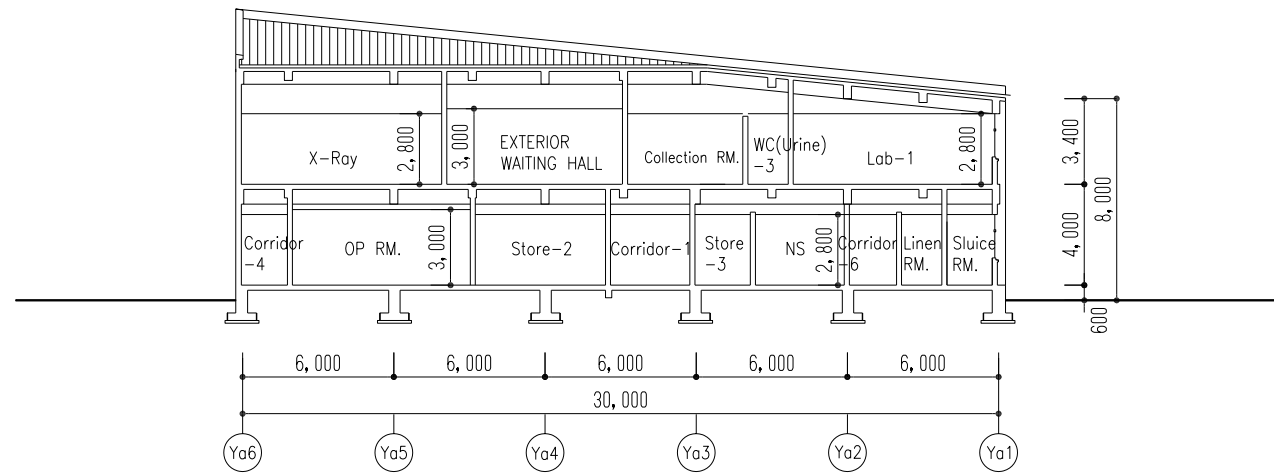
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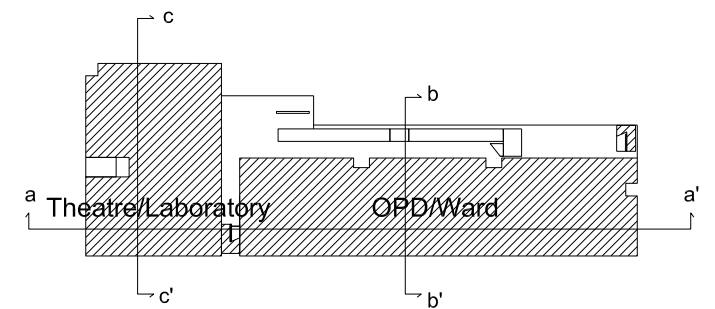
a-a' Section



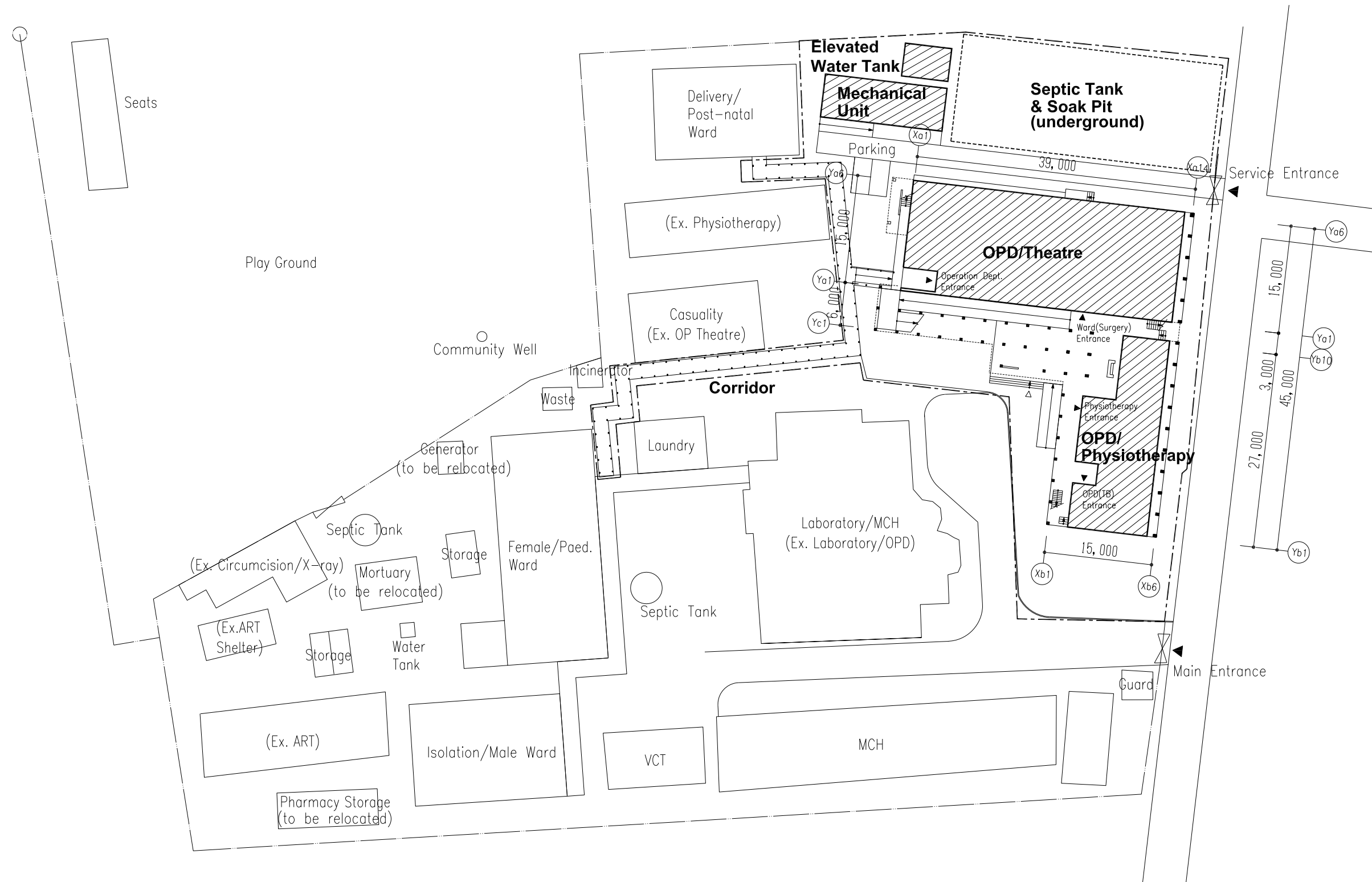
b-b' Section





c-c' Section

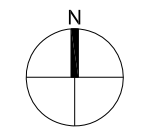


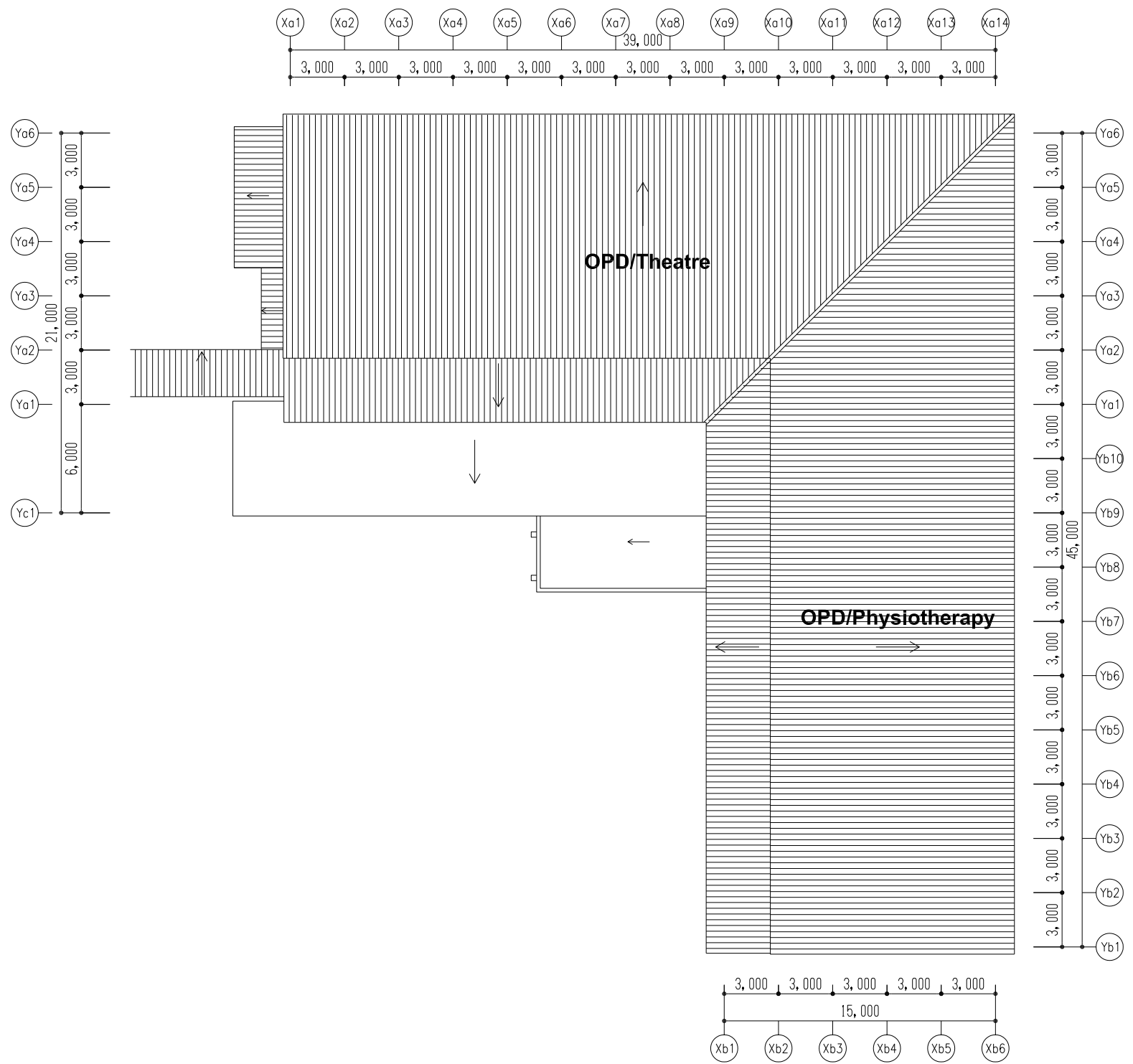
	KANYAMA LEVEL 1 HOSPITAL	SECTION
		A3: 1/300



-LEGEND-

-  FACILITIES CONSTRUCTED BY JAPANESE SIDE
-  CONSTRUCTION AREA

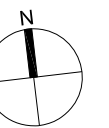


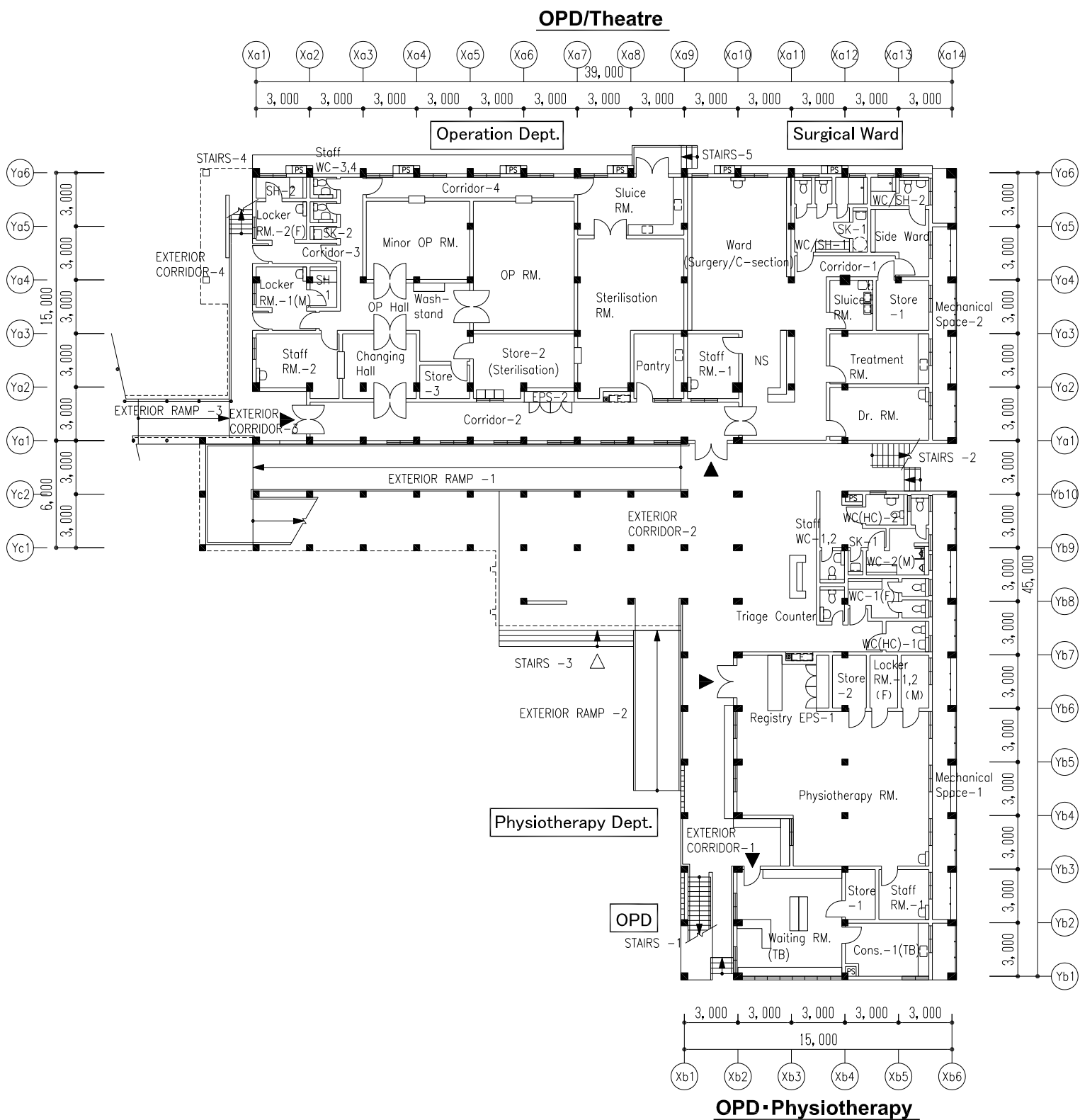


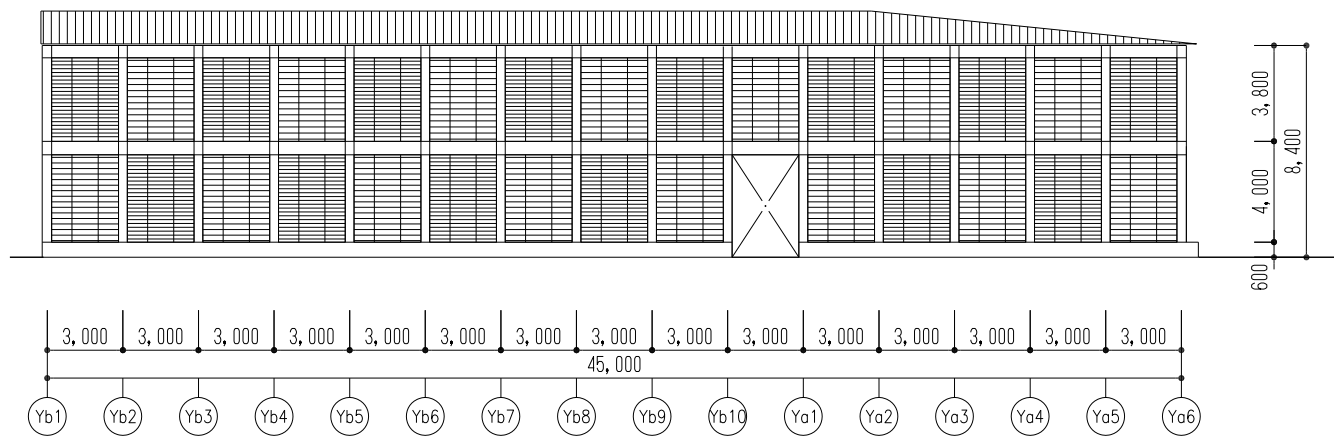
CHAWAMA LEVEL 1 HOSPITAL

ROOF PLAN

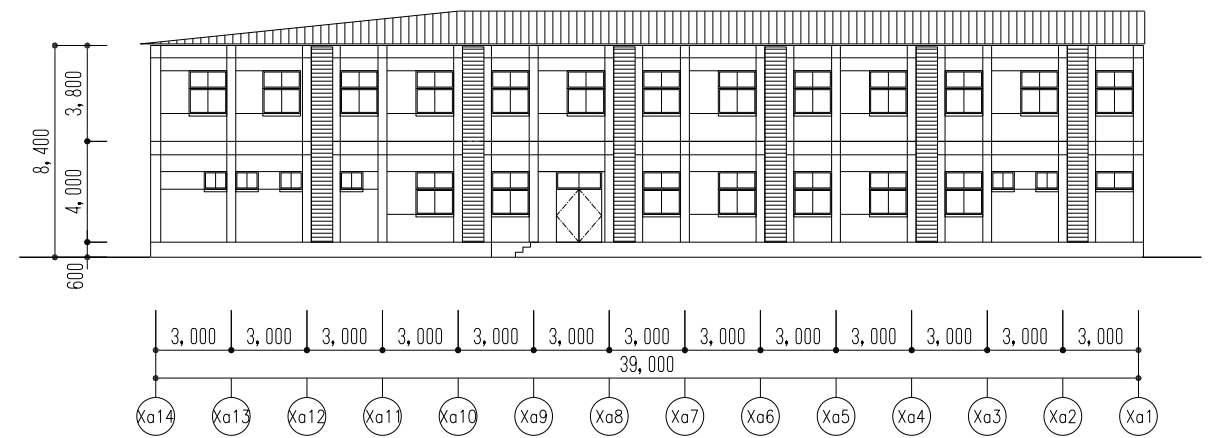
A3: 1/300



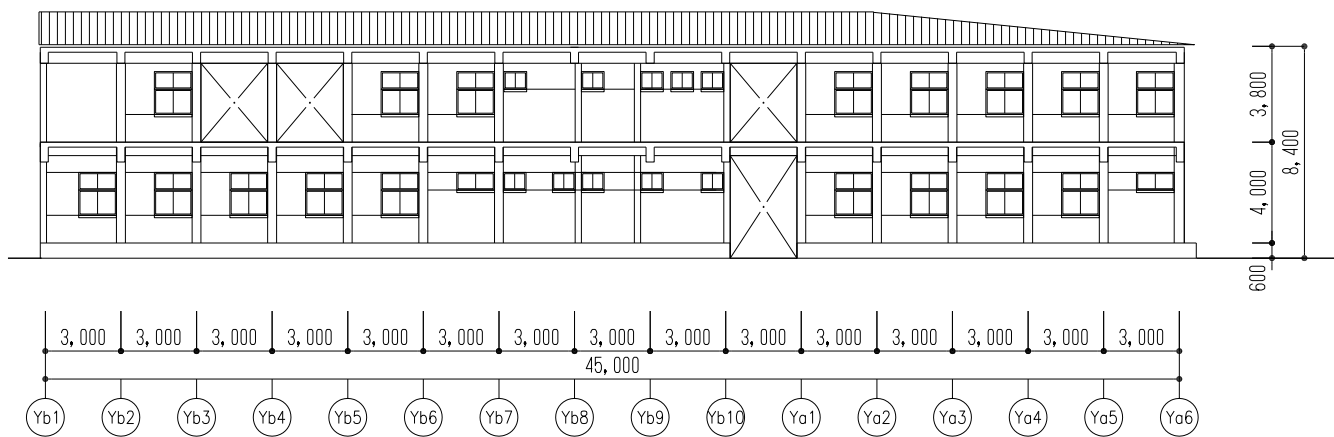




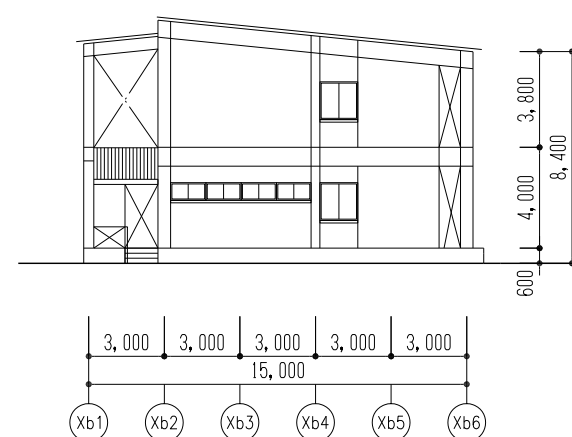
Elevation-a



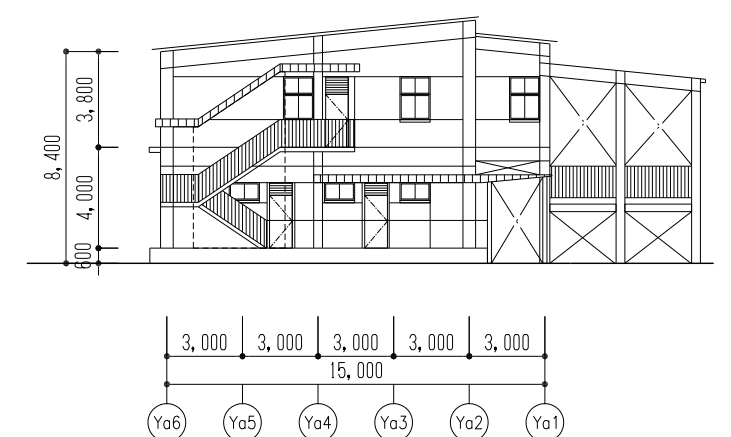
Elevation-b



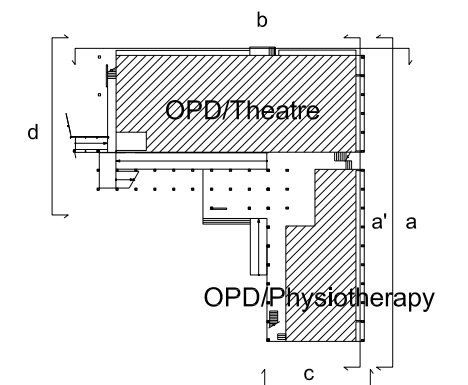
Elevation-a'



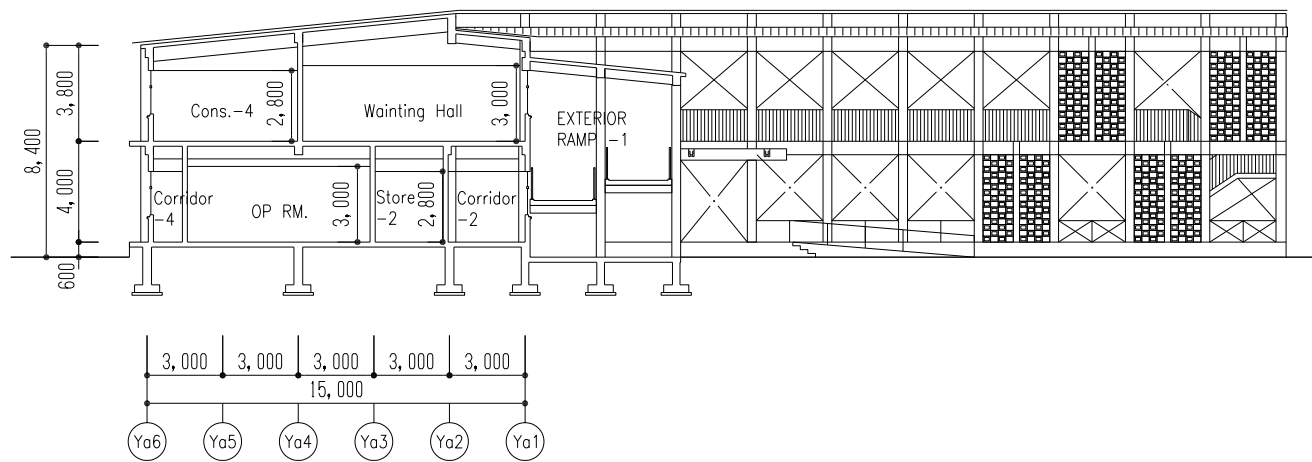
Elevation-c



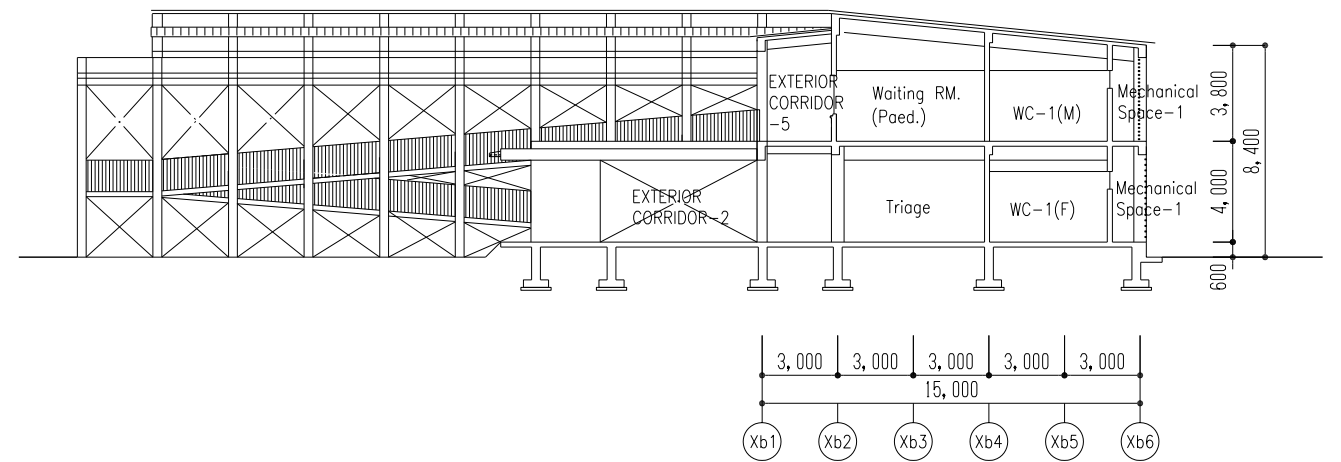
Elevation-d



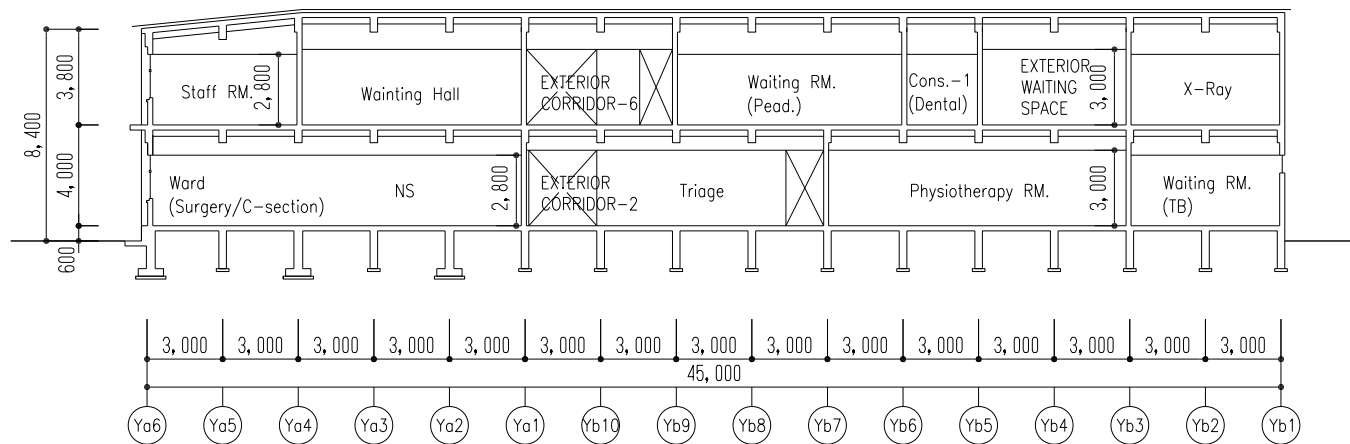
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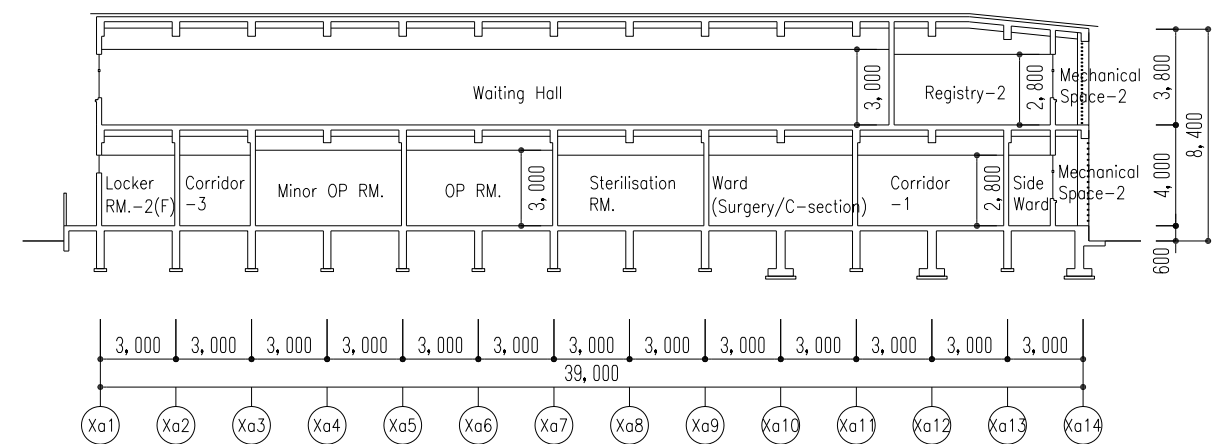
a-a' Section



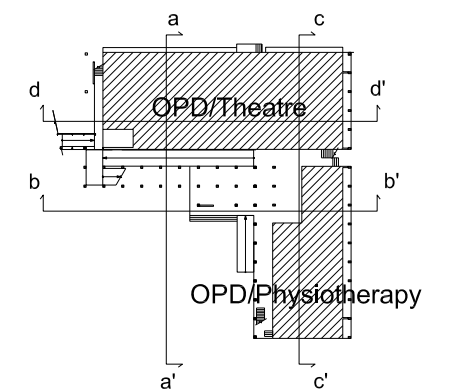
b-b' Section



c-c' Section



d-d' Section



CHAWAMA LEVEL 1 HOSPITAL	SECTION
	A3: 1/300

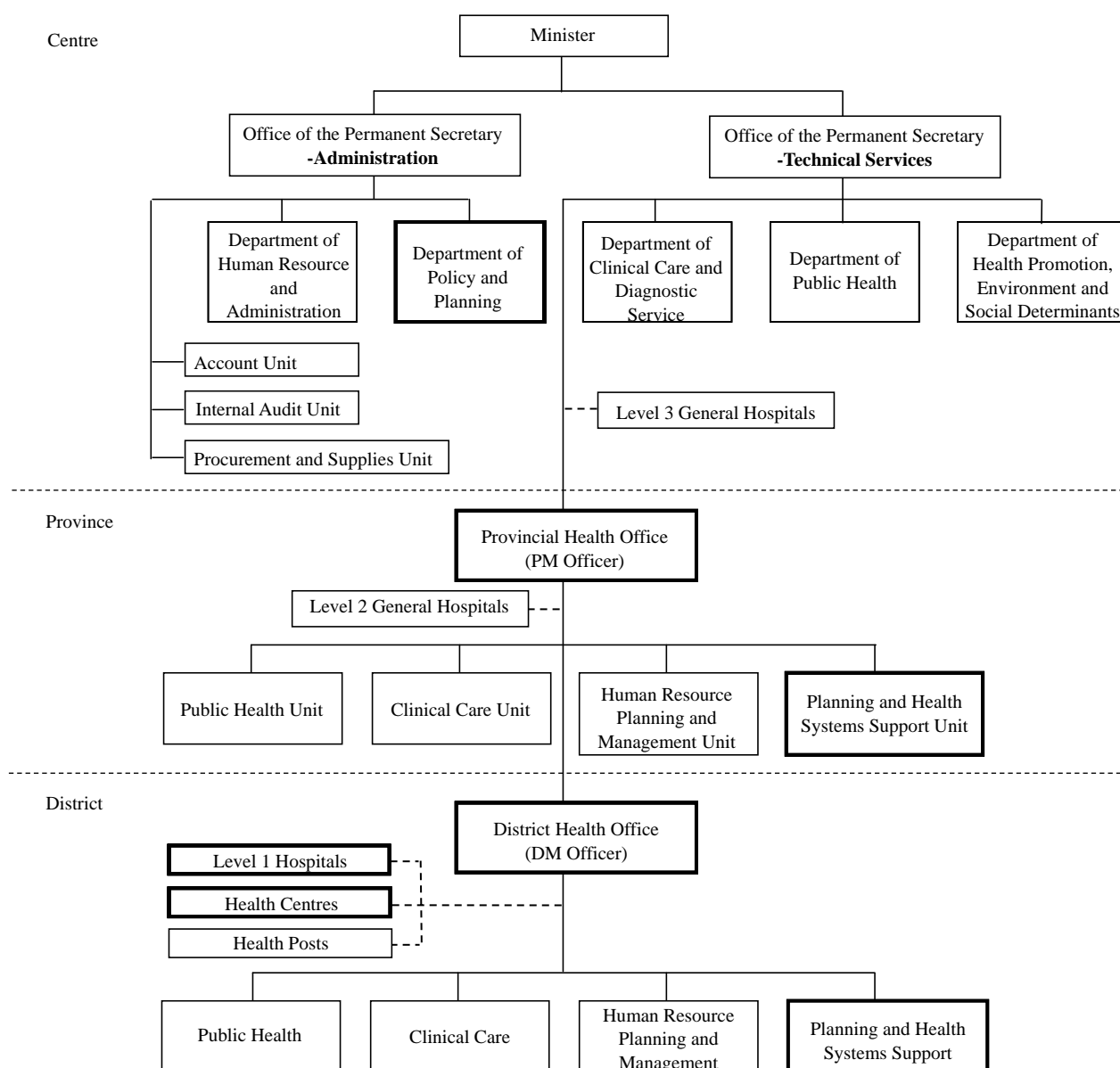
2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Project Implementation Structure

The Project will be carried out according to the grant aid system of the government of Japan with the cabinet approval of the government of Japan, after the exchange of notes (E/N) and grant agreement (G/A) related to the Project are signed with Zambia.

The organisational body implementing the Project is the Policy / Planning Bureau in the MOH with the cooperation of the PHO and DHO. The contracting party on the Zambia side is the MOH, who will conclude a consultant agreement and a construction / medical equipment contract and conduct the works that Zambia is in charge of related to the Project. An organisation chart is presented in Figure 2-36:



Source: Interviews from MOH

Figure 2-36 Project Implementation Structure

(2) Consultant

After the exchange of notes and grant agreement are signed, the MOH will conclude a consultant agreement regarding detailed design and construction administration with a consultant company of a Japanese corporate body. A consultant agreement document will be issued with the approval of JICA. To proceed with the Project smoothly, it is important to sign a consultant agreement promptly after concluding the grant agreement. Once the contract is made, the consultant will need to prepare bidding documents (detailed design drawings / specifications, etc.) based on the investigation report through consultation with the MOH and obtain content confirmation from Zambia according to the aforementioned approval procedures. Bidding tasks and construction administration work will be carried out according to the bidding documents.

(3) Contractor

There are two types of works related to the Project: i) construction work to construct the facilities and ii) medical equipment procurement for the procurement, installation, and trial runs of medical equipment. The companies that each work task is given out to are restricted to Japanese corporate bodies with a certain level of qualification. Contractors will be selected by general competitive bidding that is restricted by qualification.

The MOH will enter into a contract agreement with each of the contractors selected by bidding to be in charge of the construction work and/or medical equipment procurement, and the contract documents are to be approved by JICA. After this, the contractors responsible for each part of the construction work and medical equipment procurement will promptly initiate their work to accomplish the work according to the work contract document.

(4) Utilisation of Local Consultants

In work administration, help from local architectural and facility engineers will be utilised in addition to resident Japanese administrators because the works employ a construction method widely used in the region.

(5) Utilisation of Local Architectural Engineers and Dispatch of Japanese Professional Engineers

There are no relevant Japanese companies that have branches in Zambia, and at this point, only a small number of companies are proceeding with road works related to grant assistance. Local construction companies are mostly small- or middle-scale firms, and most of the large-scale works in Lusaka City are carried out by major construction companies of the Republic of South Africa. There are, however, many small to mid-size construction works ongoing in Lusaka City, and there are also some cases where local construction companies take part in large-scale works as companies cooperating with foreign construction companies that are in charge of the work. Therefore, it can be believed no problem to proceed with works of this planned size in a structure that uses local construction companies as firms cooperating with the original Japanese contractor

if Japanese engineers pay careful attention to such aspects as process, quality, and safety control, as well as giving detailed technical guidance.

In most construction sites in Zambia, local workers undertake the work tasks. Therefore, it's not thought to be any problem in procuring experienced, skilled workers in Lusaka City, the capital of Zambia, but for some special medical equipment and works requiring highly advanced techniques, technical guidance will be provided to manage construction by sending professional engineers from Japan or third countries such as the Republic of South Africa as needed.

2-2-4-2 Implementation Condition

(1) Makeshift Planning

The construction sites of all of Chipata, Kanyama and Chawama areas, the site of the Project, lie on the premises of existing hospitals. For each of the area, a gate shall be installed for works on the frontal road side separately from the main gate of the existing hospital to provide a carry-in route that will not affect the daily medical services to be offered as a hospital. Additionally, there is no room on the site for makeshift buildings (temporary office, construction shed, material storage, processing area, etc.) or vehicles for works, so the construction will be made on the premises that public open area near the site is used. (Request has already been agreed that the makeshift site be offered in the Minutes.) For each of the area, a temporary enclosure will be installed with corrugated galvanised steel sheets including a makeshift area to prevent any possible accidents causing injury to a third person and to ensure safety for security reasons.

(2) Material Procurement

Limited construction industrial materials are manufactured in Zambia except for wood products and concrete products including cement, concrete blocks, precast concrete, bricks, and interlocking blocks. Most of them used here are imported products from the Republic of South Africa. Imported products, however, are mostly provided by manufacturers with agents in Zambia, and many of the construction materials are sold at domestic markets on a daily basis. Therefore, in procuring general construction materials, basically products that can be purchased locally shall be taken, considering cost and maintenance availability after completion of construction. However, for products and facility equipment requiring customisation including metal fittings, it's also need to apply imported products from Japan or third countries including the Republic of South Africa.

(3) Special Construction Method

To reduce construction costs in the Project, basically materials / products shall be taken when it can be procured locally wherever possible and avoid employing any particular kind of construction method so that local contractors can undertake the construction without problem.

(4) Medical Equipment Procurement

There are some tasks in the medical equipment-related works that have blurry boundaries with the construction works: for example, installation of the general X-ray equipment and water supply / discharge medical equipment work required for a dental unit. For these tasks, the consultant will need to coordinate among the construction contractors and medical equipment supplier and give them necessary instructions. Medical equipment installation work will need to be performed so as not to interfere with the activities of the hospitals. In the Project, there is the task of procuring simple medical equipment, for example, medical furniture, which is to be undertaken by Zambia, so it's necessary to discuss and adjust the schedule and process of procurement and transfer of medical equipment with Zambia to ensure smooth implementation.

2-2-4-3 Scope of Works

To proceed with the Project smoothly, work responsibilities are to be clearly defined between the Japan and the Zambia sides as shown in the table below:

Table 2-28 Scope of Work between Zambia and Japan (Chipata, Kanyama, and Chawama)

To be covered by the Japanese Side	To be covered by the Zambian side
	To secure and prepare land
	To get building permission (EIA)
	To clear, level and reclaim the site when needed 1) Dismantle unnecessary structures. 2) Dismantle existing building within the site 3) Relocate existing electrical power cable crossing the site 4) Relocate existing telephone line crossing the site 5) Relocate existing water pipe crossing the site 6) Relocate existing sewer
	To construct gates and fences in and around the site
To construct roads 1) Within the site	To construct the parking lot 1) Outside the site
To construct Exterior Work within the site 1) Grading, Lighting, Storm Drainage Ditch	To construct roads 1) Outside the site
Building Construction 1) Architectural Work Incl. built-in furniture and medical curtains 2) Electrical Work Power Supply, Lighting and Socket Outlet, Lightning Protection and Earthing, Telephone Piping, Public Address, Intercom, Fire Alarm, Piping for PC Network. 3) Mechanical Work Water Supply, Drainage, Hot Water Supply, Sanitary, Fixture, LPG Supply, Fire Fighting, Air Conditioning and Ventilation, Rain Water Utilization 4) Other Work Generator, Oxygen Gas Supply, Laboratory Septic Tank, Soak Pit Waste Water Treatment System, Water Tank (Only Kanyama)	
Electricity, Telephone, Water Supply, Drainage and other supply 1) Electricity a. Drop wiring and internal wiring within the site b. Main circuit breakers and transformer c. Piping to the main circuit breaker from site boundary, including manholes and handholes d. Branch breaker and piping system to existing main distribution panel within the site 2) Water Supply d. Provide on-site facilities with tank, elevated water tower, water reservoir, water supply to new buildings e. Provide water supply capacity and piping to existing facilities within the site 3) Drainage a. On-site drainage 4) Telephone System a. Provide wiring on-site and for new buildings b. Provide on-site piping and hand hole 5) Other Infrastructure a. Wireless radio, power supply and plumbing for emergency telephone 6) Furniture and Medical Equipment a. Curtain rails and medical curtains b. Medical furniture and fixed furniture c. Supply and installation of medical equipment	Electricity, Telephone, Water Supply, Drainage and other supply 1) Electricity a. Incoming high-voltage line to the main circuit breaker and related work (incl. installation of hand holes and off-site poles) b. Connection cabling work between substation and existing main distribution panel c. Work on-site and off-site construction changes 2) Water Supply a. Connection work of City Water to site, including meter installation b. Work on-site and off-site construction changes c. Well piping construction 3) Drainage a. Off-site plumbing and drainage (Incl. connection pit) b. Work on-site and off-site construction changes 4) Telephone System a. Provide telephone main trunk line to the main distribution frame/panel (MDF) (Off-site poles, installation of hand holes and wiring) b. Work on-site and off-site construction changes 5) Other Infrastructure a. Relocation of radio, antenna and cabling for wireless radio system if necessary 6) Furniture and Medical Equipment a. Curtains and blinds b. General furniture c. Linen

The important point in facilitating the Project smoothly is to control each process properly between the various works of construction, electricity, machine and medical equipment installation works. The people involved in the works will need to adjust the construction schedule, with full understanding of the conditions and contents of medical equipment installation. The Project includes such works as removal of existing buildings, infrastructure improvement, and outdoor facility work at the expense of Zambia, therefore it is also important to check the progress of the works as necessary by both Zambia and Japan. For infrastructure improvement (electricity, water, etc.), an agreement has been received from Zambia to finish the tasks by the time of the start of the works. Close meeting is necessary with Zambia taking this opportunity, and other opportunities; to explain the design to make sure that the tasks are completed by the start of construction and that they will not affect the whole schedule. Prior to the various works to upgrade the infrastructure, makeshift work of pumping and routing to the existing buildings is also needed.

2-2-4-4 Consultant Supervision

A consultant company of a Japanese corporate body will conclude a consultant agreement with the MOH to make a detailed design (preparation of bidding documents, etc.) and conduct bidding and construction administration works for the Project.

The purpose of construction administration is to ensure that the contents of the work contracts are properly handled including whether the works are conducted according to the design documents. They will perform quality assurance and process control by giving instructions or advice and coordinating each party as necessary during the construction period. Construction administration works include the following:

(1) Cooperation regarding Bidding and Contract

They will be responsible for various bidding-related tasks needed to determine the contractors for the construction and medical equipment works, including invitation to bidding, acceptance of bidding application, qualification examination, holding a bidding explanatory meeting, distribution of bidding documents, acceptance of bidding documentation, and evaluation of bidding results. They will also offer advice and/or support in signing work contracts between the contractors winning the bids and the MOH in Zambia.

(2) Giving Instructions / Support to Contractors

They will provide instructions, advice, or support to the contractors as necessary by reviewing the construction schedule, construction planning, construction material procurement planning, and medical equipment procurement / installation planning

(3) Review and Approval of Construction Drawings and Manufacturing Drawings

They will review the construction drawings, manufacturing drawings, and documentation submitted by the contractors and give approval after providing necessary instructions.

(4) Verification and Approval of Construction Materials and Medical Equipment

They will verify whether the construction materials and medical equipment to be procured by the contractors are consistent with the work contract documents, and give approval to use them.

(5) Work Inspection

They will conduct inspection at any factory manufacturing the construction materials and medical equipment, witness work tests, and perform any necessary inspection to ensure quality and performance.

(6) Report on Work Progress

They will keep track of the situation on the construction site against the construction schedule to report the work progress to the organisations involved in both countries.

(7) Completion Inspection and Trial Run

They will perform a completion inspection and trial run inspection regarding construction, related facilities, and medical equipment, verify that the performance is ensured as described in the work contract documents, and submit an inspection report to the MOH.

(8) Structure of Construction Administration

The consultant will assign local resident administrators to accomplish the aforementioned tasks. They will also send engineers with individual applicable expertise to the site according to the progress of the work, and take necessary actions including holding discussions, conducting inspections, giving instructions, and coordinating each party. On the other hand, they will allocate responsible engineers within Japan to have them review technical matters and serve as a contact window for the site. They will also report necessary items regarding the progress situation, payment procedures, and completion handover of the Project to Japanese Government-related organisations.

The chart below shows the construction administration structure:

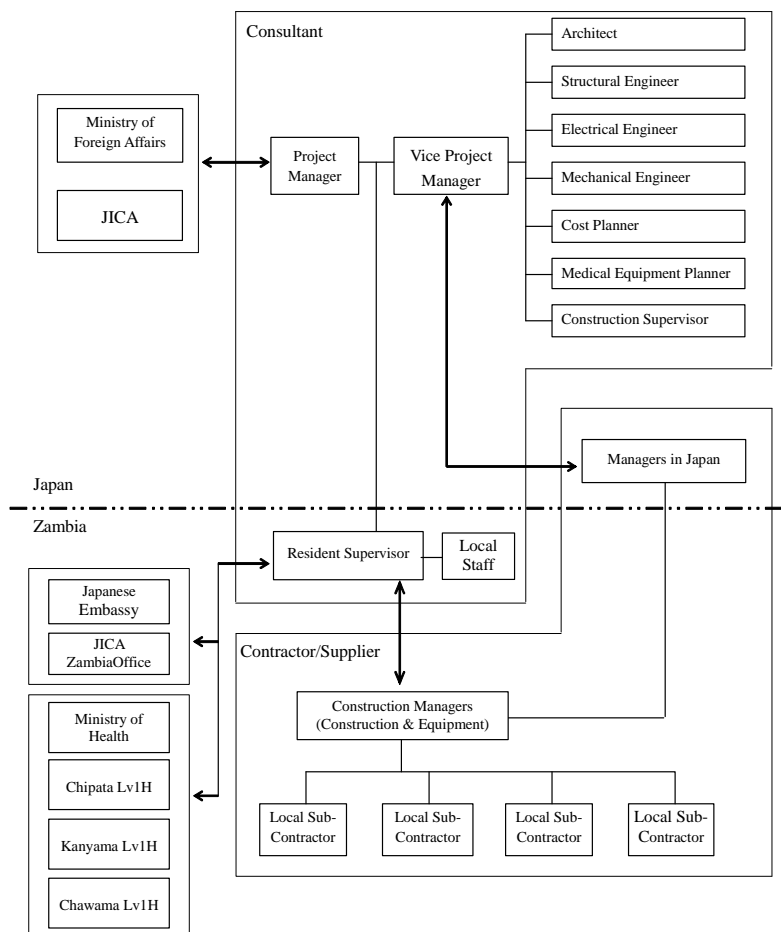


Figure 2-37 Supervision System

2-2-4-5 Quality Control Plan

(1) Concrete

Basically the Japanese standard will be used for the quality management planning of concrete, which is the public building work standard specification (Public Buildings Association) and JASS5 (Architectural Institute of Japan), and will also referring to the quality management planning commonly used in Zambia as needed.

1) Specified Mix Proportion

The specified mix proportion will be determined based on trial mixing. Trial mixing should continue until the specified slump, specified air capacity, required air-dried weight per unit volume, and required average strength can be obtained.

2) Curing

Curing of specimens is to be on-site underwater curing. The curing temperature should be as close to the conditions of the buildings as possible. The specimens are to be sampled once per 150 m³ on each day of casting.

3) Average Strength Required

In principle, the average strength required is to be checked by the compressive strength of twenty-eight-day-old material. The compression test on the specimens should be conducted at a third-party organisation, a university for example.

4) Chloride Quantity

The chloride quantity is to be checked using a method commonly used in Japan if it is under 0.30 kg/m³.

(2) Reinforcement Work

There is one place where reinforcement can be processed in Lusaka City, but in view of unexpected situations, reinforcement will be processed on site. Basically reference shall be the public building work standard specifications (Public Buildings Association) and JASS5 (Architectural Institute of Japan) for the quality management and inspection of reinforcement processing / assembling, and will also added the quality management planning commonly used in Zambia as needed.

The builders will undergo a bar arrangement inspection by the work administrators after reinforcement assembling and before concrete casting. The areas to be inspected are according to the instructions of the work administrators.

(3) Formwork

Basically reference shall be the public building work standard specifications (Public Buildings Association) and JASS5 (Architectural Institute of Japan) for the quality management / inspection of formwork, and also the quality management planning commonly used in Zambia as needed.

The builders will undergo an inspection by the work administrators before concrete casting regarding the gap between the sheathing and the outermost reinforcement. The areas to be inspected are according to the instructions of the work administrators.

(4) Inspection of Finishing of Concrete in a Structure and Covering Depth

Reference shall basically be the public building work standard specifications (Public Buildings Association) and JASS5 (Architectural Institute of Japan) for inspection regarding the position of the materials, cross-sectional dimensions, surface finishing conditions, finishing flatness, and any flaws in casting of the concrete in a structure as well as covering depth, and also reference to the quality management planning commonly used in Zambia as needed.

The actions needed when the inspection results for the finishing of the concrete in a structure and covering depth do not meet the requirements will be according to the instructions of the work administrators.

2-2-4-6 Procurement Plan

(1) Procurement of Construction Equipment and Materials

Given that the Project is to construct hospital facility, selected equipment and materials shall be easy to keep clean, easy to maintain, and robust in order to meet the requirements as hospital facility. Regarding the applicable standard for equipment and materials, materials shall be what complies with BS (British Standard), which is commonly used in the region, but materials can be selected without applicable standard according to JIS. The procurement principles are as follows:

1) Local Procurement

To facilitate repair and/or maintenance works after completion, the equipment and materials to be used will be procured locally wherever possible. In this context, imported products that can be obtained freely in Zambia's markets (equipment and materials that is invariably sold at markets for which importation procedures are unnecessary) are considered to be local products. Most of the construction materials sold at markets are made in South Africa.

2) Procurement of Imported Products

For equipment and materials that is difficult to obtain locally, that cannot meet the required quality, or that is considered to have unstable supply quantity, imported products shall be procured from Japan or third countries including South Africa. In this case, it is important for the contractors to communicate with the MOH regarding importation / customs clearing to facilitate the advance procedure including tax exemption measures so that it does not affect the construction schedule. In importing from South Africa, most products are transported by land. Since Zambia is an inland state, the main transportation route for the construction materials procured from Japan or third countries will be ocean transportation up to the Port of Dar es Salaam, the main trade port in Tanzania, and surface transportation from Dar es Salaam to Zambia. Almost all construction materials including steel products, glass, and tiles are made in South Africa. For facility equipment, it shall be considered that the optimum import procurement from a broad range of options including Southeast Asian nations, keeping in mind a maintenance system after completion as well.

3) Transportation Planning

It takes about seven days to transport goods from the Port of Dar es Salaam in Tanzania to Lusaka City including the various procedures to be taken. Since mining resources are actively distributed, transportation roads located on the transportation route, are well maintained.

4) Procurement Planning

Based on the above mentioned considerations, the main construction equipment to be procured is presented in the table below by classification into local procurement, procurement from Japan, and procurement from third countries:

Table 2-29 Procurement Plan for Major Construction Materials and Equipment

Type of work	Material and equipment	Procurement			Note
		Local	Japan	Third country	
Reinforced concrete work	Fine aggregate	○			
	Coarse aggregate	○			
	Concrete	○			
	Deformed bar	○			
	Form	○			Products from Republic of South Africa can be procured.
	Fine aggregate	○			
Steel work	Steel frame (small and ordinary steel members)	○			Products from Republic of South Africa can be procured.
Masonry	Concrete block	○			
	Ventilation block	○			
Waterproofing work	Silicon sealing material (for pane and sash peripheral sealing)	○			Products from Republic of South Africa can be procured.
Plastering work	Cement mortar	○			
Tile work	Tiles	○			Products from Republic of South Africa can be procured.
Stone work	Terrazzo block work	○			
Carpentry	Timber for fitting works	○			
Roofing work	Steel folded plate	○			Products from Republic of South Africa can be procured.
Metal work	Light-weight ceiling substrate	○			Products from Republic of South Africa can be procured.
	Decorated metal ware, handrail	○			Products from Republic of South Africa can be procured.
	Curtain rails for ward	○			Products from Republic of South Africa can be procured.
	Aluminium ceiling inspection hole, Aluminium expansion joint, Grating cover Manhole cover,	○			Products from Republic of South Africa can be procured.
Wooden fixture work	Door, fixture, frame	○			Local products
Metal fixture work	Aluminium fixtures	○			Imported and procured from Japan for quality.
	Light steel fixture	○			Imported and procured from Japan for quality.
	Steel fixture (airtight)	○			Imported and procured from Japan for quality.
	X-ray shielding door, window	○			Imported and procured from Japan for quality.
	Metal parts for fixture	○			Imported and procured from Japan for quality.
Glass work	Ordinary sheet glass, 6mm	○			Products from Republic of South Africa can be procured.
	Glass block	○			Products from Republic of South Africa can be procured.
Painting work	Interior painting	○			Products from Republic of South Africa can be procured.
	Exterior painting	○			Products from Republic of South Africa can be procured.

Type of work	Material and equipment	Procurement			Note
		Local	Japan	Third country	
Interior finish work	PVC sheet with welding method	○			Products from Republic of South Africa can be procured.
	System ceiling of mineral fibre decorative acoustic panels	○			Products from Republic of South Africa can be procured.
	Calcium silicate board	○			Products from Republic of South Africa can be procured.
	PVC ceiling cornice	○			Products from Republic of South Africa can be procured.
Finishing unit work	Sink, medical sink	○			Products from Republic of South Africa can be procured.
	Overhead cabinet	○			
	Wooden furniture	○			
	Doorplate, guide plate, etc., building plaque	○			Products from Republic of South Africa can be procured.
Exterior work	Interlocking block	○			
	Curb	○			
	Galvanized grating	○			Products from Republic of South Africa can be procured.
Electric facility work	Power generator	○			Products from Republic of South Africa or from Europe can be procured.
	Boards		○		Procured from Japan for quality
	Lighting equipment	○	○		Pipes and cables to be procured from Japan for quality. Others to be procured from Republic of South Africa.
	Wiring accessory	○	○		Products from Republic of South Africa can be procured. Or Procured from Japan for quality.
	Wires, cables	○	○		Local products (Underground trunk cables and communication cables are procured from Japan, if there are no domestic products.)
	Interphone		○		Procured from Japan for quality
	Automatic Fire alarm	○	○		Pipes and cables to be procured from Japan for quality. Equipments can be procured from Republic of South Africa or from Europe.
Machine facility, Installation	Air conditioner		○		Procured from Japan for quality.
	Forced and exhaust ventilator	○			Procured from Republic of South Africa.
	Duct material		○		Procured from Japan for quality.
	Elevated water tank		○		Procured from Japan for quality.
	Sanitary ware	○	○		Procured from Republic of South Africa or Japan for quality and price. Urinals, sink, sewage, chemical faucet and plaster trap can be procured from Japan.
	Piping material	○	○		Procured from Republic of South Africa or Japan for quality and price. Products except for Polyvinyl chloride pipe can be procured from Japan.
	Pump	○	○		Procured from Japan for quality Only drain pump can be local products
	Medical gas facility		○		Procured from Japan for quality
	Special wastewater treatment tank	○	○		Procured from Japan for quality Fire hydrant and fire extinguisher box can be local products

(2) Supplier of Medical Equipment

The medical equipment in the Project will be basically procured from Japan or Zambia. However, some of the equipment require maintenance contract with a local agency of the manufacturer for maintenance services. In addition, there is a possibility that a competitive and fair tender will not be established by procuring the medical equipment limited to Japanese products. Therefore, procurement from third countries will be considered for some of the equipment.

Regarding the equipment that can be procured locally in Zambia, we will design the tender condition that the equipment should have CE mark in order to avoid low quality equipment.

Major medical equipment which will be procured in the Project are as follows.

Table 2-30 Procurement of Major Medical Equipment

Name of Medical Equipment	Procurement		
	Local	Japan	Third country
X-ray equipment, X-ray equipment (Mobile type), Ultrasonic diagnostic device, Ultrasonic diagnostic device (Mobile type), Anesthetic machine, Electro surgical unit, Vital signs monitor (Portable), Transport incubator, Infant warmer, Autoclave (electric, 400 liters), Operating-room light (fixed, ceiling mounted)	—	○	○
Dental light curing unit, Dental X-ray unit	—	○	—

Table 2-31 Subject to Maintenance Contract for Medical Equipment

Name of Medical Equipment
X-ray equipment
X-ray equipment (Mobile)
Ultrasonic diagnostic device
Ultrasonic diagnostic device (Mobile type)
Anesthetic machine

Table 2-32 Contents of Maintenance Contract

Name of Medical Equipment
Periodical maintenance (per year)
On call service (4 / year)
Repair costs and parts replacement costs will be paid by <i>Zambian side</i> .
On-call service fee becomes chargeable from fourth time onwards and will be paid by <i>Zambian side</i> .
X-Ray equipment costs include exchange costs of X-Ray Tube

In terms of transportation planning, in the case of procuring medical equipment from Japan and other countries except Zambia, major route is marine transportation to a port of Dar es Salaam in Tanzania. Then, land transportation will be used from Dar es Salaam in Tanzania to Lusaka City in Zambia. It takes approximately two months to transport from a port of Yokohama in Japan to a port of Dar es Salaam in Tanzania. Then, it takes approximately twelve days from a port of Dar es Salaam in Tanzania to Lusaka City including the various procedures to be taken.

2-2-4-7 Operational Guidance Plan

(1) Initial Handling Training

For basic methods of operating medical equipment, an engineer sent by the medical equipment supplier at the time of carry-in and installation of the medical equipment procured will provide training to the medical staff in the project facilities. The training will include initial operation guidance, special notes on maintenance, explanation of the daily checkup method, and brief description of troubleshooting for medical equipment needing installation.

(2) Planning of Operation Guidance

In response to a request from the MOH, instructions will be given on operational maintenance of medical equipment to personnel including maintenance staff in the project facilities utilising soft component (technical assistance). This will include holding a seminar on the importance of medical equipment maintenance, checkup, and operation. By having all maintenance staff members in the MOH, PHO, and DHO participate, it is aimed to enhance the maintenance skills of every related organisation.

2-2-4-8 Soft Component (Technical Assistance)

(1) Background to Soft Component Planning

By upgrading Chipata UHC, Kanyama UHC and Chawama UHC located in Lusaka District to level 1 hospitals, the Project aims to make referral system work and at the same time, mitigate crowded condition and burden in the UTH, a tertiary-level medical facility located in the same district. Components of facility works and medical equipment procurement include construction of OPD/Theatre building and OPD/Maternity building for Chipata Lv1H, Theatre/Laboratory building and OPD/Ward for Kanyama Lv1H, and OPD/Theatre building and OPD/Physiotherapy building for Chawama Lv1H as well as provision of the necessary medical equipment for each hospital.

The survey team has presented following concerns regarding current facilities and medical equipment maintenance methods based on field investigations conducted from 15 February to 13 March, 2016:

- ① Maintenance staff members in the DHO are in charge of maintenance works in several level 1 hospitals, but it is difficult to give close attention to all level 1 hospitals.
- ② Medical service level is impaired due to breakdown of facility utilities and medical equipment.
- ③ Medical water is not disposed of correctly, which poses a risk of deteriorating the surrounding environment and causing in-hospital infections.
- ④ Periodic checkups of facility utilities are not conducted.

Regarding above problems, Zambia has requested that technical training shall be given by Japan for maintenance system and water discharge system of newly built facility, and medical equipment.

In Zambia, personnel in charge of facilities and medical equipment at the MOH, DHO, or PHO manages level 1 hospitals, and no personnel is in charge of specific level 1 hospital maintenance as of the time of preparatory survey. The DHO currently divides Lusaka District into 5 zones and sends 2 engineers per zone that go around level 1 hospitals for maintenance. The on-site survey confirms that in accordance with the Project, the MOH will assign a Technologist who is a human resource personnel in line with the assignment standard of level 1 hospitals and establish maintenance department for facilities and medical equipment after implementation of the Project, in order to ensure appropriate operation and maintenance of facilities and medical equipment at Chipata Lv1H, Kanyama Lv1H, and Chawama Lv1H. Cooperation with manufacturers' agencies in Zambia is also planned for appropriate maintenance of medical equipment.

Consumables and spare parts of equipment shall be exclusively managed by above mentioned person in charge of equipment maintenance in DHO warehouse. Equipment maintenance

personnel of three level 1 hospitals shall manage directly distributed consumables and spare parts for each facility, and obtain them from DHO warehouse, when needed.

Main improvements expected through implementation of technical assistance in soft component are as follows:

- ① From the viewpoint of the surrounding environment, in-hospital infections, and continuity of medical services, it will make medical staff recognise importance of maintaining facility utilities and medical equipment and enhance knowledge and technical level.
- ② The effect of preventive maintenance will be created by establishing a management system that can keep track of inventory books, failure history, and places to which facility utilities and medical equipment have been allocated, an inventory system to control consumables and replacement parts, and a system for daily and periodic checkups, which will make the budget available, shorten the failure period, reduce the risk of in-hospital infections, and maintain the medical service level.
- ③ By optimising operation of water discharge systems, both inside and outside environment of hospitals will be improved.
- ④ Daily and periodic checkups of facility utilities will be conducted.

In implementing technical assistance, a participatory method will be applied for planning to enhance development of self-reliance; a plan shall be organized in its contents by holding workshops. Formats and ledger of medical equipment maintenance system shall be taken over from recent technical cooperation projects (Health Capital Investment Support Project) without contradiction in the contents, for smooth coordinate with other technical cooperation projects.

(2) Object of Technical Assistance

- ① Importance of establishing a medical facility / medical equipment maintenance system shall be recognized in the targeted hospitals.
- ② Maintenance system of facilities and medical equipment will be established and appropriate maintenance will be conducted at the target hospitals.
- ③ Medical equipment maintenance with daily and periodical check shall be conducted, which will make equipment conditions improved.

(3) Technical Assistance Outcome (Direct Effect)

The following table shows outcome achieved through implementation of technical training in technical assistance:

Table 2-33 Technical Assistance Direct Effect

Technical Training	Direct Effect
Guidance on importance of a maintenance system	<ul style="list-style-type: none"> • Importance of strengthening maintenance system will be understood. • An independent maintenance system will be established to secure appropriate personnel. • The concept of preventive maintenance will be fully recognised.
Guidance on daily and periodic checkups of facility utilities	<ul style="list-style-type: none"> • Daily and periodic checkups of facility utilities will be implemented.
Guidance on establishing maintenance system and enhance management ability	<ul style="list-style-type: none"> • Maintenance ability level of staff will be enhanced. • Facility will be properly utilised and operated. • Handling ability against breakdown will be improved, and periodic checkups will be implemented. • Information of solutions against breakdown will be known, they can smoothly inform proper person to solve breakdown and repair medical equipment.
Guidance on creating and implementing an annual maintenance plan	<ul style="list-style-type: none"> • Appropriate personnel will be appointed (in terms of number or ability) • Annual maintenance plan will be created and its budget will be secured. • Items, numbers, and expenses of supplies needed next year will be grasped, and supplies will be replenished smoothly.

(4) Verification of Outcome Achievement

The following table shows indicators to verify achievement of outcome by implementation of technical training in the assistance:

Table 2-34 Verification of Outcome Achievement

Item	Verification Method
Guidance on importance of maintenance system	<ul style="list-style-type: none"> • Confirmation of assignment of maintenance personnel • Confirmation of appropriate actions for securing budget
Guidance on daily and periodic checkups of facility utilities	<ul style="list-style-type: none"> • Confirmation of implementation status of daily and periodic checkups of facility utilities
Guidance on establishing maintenance system and enhance the management ability	<ul style="list-style-type: none"> • Confirmation of maintenance system flow • Confirmation of medical equipment ledgers • Confirmation of regular checkup sheets and adjustment planning • Confirmation of implementation status of preventive maintenance • Confirmation of implementation status of explanation or guidance to doctors and nurses by maintenance department
Guidance on creating and implementing an annual maintenance plan	<ul style="list-style-type: none"> • Confirmation of documentation: maintenance records, annual maintenance plans • Confirmation of maintenance budget plan for next year

(5) Soft Component Activities (Input Planning)

Table 2-35 Soft Component Activities (Facility Utilities)

Japanese Consultants:

1. Facility maintenance engineer I: To deal with air conditioner equipment, hygiene equipment, and special utilities
2. Facility maintenance engineer II: To deal with receiving power system and light electrical appliances

Target Facility Utilities:

Substation facility, emergency generator, water treatment system, laboratory wastewater treatment system (neutralization tank), septic tanks and infiltration tank, medical gas supply system, nurse call system

Item	Activities	Affected Person	Period	Contents	Outcome
Guidance on importance of maintenance system	<ul style="list-style-type: none"> • Guidance on contents about utility design was conducted. • A maintenance system in Japan shall be introduced, and gist idea of maintenance system and a rough work flow shall be prepared as common practice. 	Superintendent (1 person), Maintenance personnel for facility (1 person) (from all the 3 Lv1Hs)	The First Field Training	Guidance on importance of implementation of periodic checkups of target facility utilities	-
Guidance on daily and periodic checkups of facility utilities	<ul style="list-style-type: none"> • Guidance on daily and periodic checkups of facility utilities 	Maintenance personnel for facility (1 person), All the department at hospital (10 people) (from all the 3 Lv1Hs)	The Second and the Third Field Training	<p>Guidance to examine whether generator work correctly by stopping power supply once a year</p> <p>Guidance to check all the nurse call system once a half year</p> <p>Guidance to implement daily and periodic checkups of other facility utilities by setting frequency of checkups properly</p>	<ul style="list-style-type: none"> • Daily and periodic maintenance manual
Guidance on establishing maintenance system and enhance the management ability	<ul style="list-style-type: none"> • Existing maintenance practice shall be checked, and a maintenance system flow, a work flow chart, and various formats shall be created with utilising cases in Japan. 	Maintenance personnel for facility (1 person) All the department at hospital (10 people) (from all the 3 Lv1Hs)	The Second and the Third Field Training	Various formats about maintenance will be created with utilising cases in Japan.	<ul style="list-style-type: none"> • Maintenance work planning • Maintenance system • Preventative maintenance planning • Ledger of facility utilities
Guidance on creating and implementing an annual maintenance plan	<ul style="list-style-type: none"> • Method of creating an annual maintenance plan shall be taught. • Method to prepare annual budget shall be taught. • Method to place an order for replacement parts and inventory method shall be taught. 	Maintenance personnel for facility (1 person) Accounting personnel (1 person) (from all the 3 Lv1Hs)	The Second and the Third Field Training	Guidance on creation of annual maintenance plan, ledger of facility utilities, and general maintenance plan.	<ul style="list-style-type: none"> • Maintenance budget plan • Annual maintenance planning (created by a technical cooperation project)

Table 2-36 Soft Component Activities (Medical Equipment)

Japanese Consultants:

1. Management engineer in charge of equipment maintenance: To deal with the equipment maintenance system

Target Medical Equipment

X-ray equipment, Ultrasonic diagnostic device, Anesthetic machine, Electro surgical unit, Vital signs monitor, Transport incubator, Infant warmer, Autoclave (electric, 400 liters), etc.

Item	Activities	Affected Person	Period	Contents	Outcome
To teach the importance of maintenance system	<ul style="list-style-type: none"> • A maintenance system will be introduced in Japan, and the gist of the maintenance system idea and a rough work flow will be prepared as common practice. In addition, practice of maintenance will be provided. 	Superintendent (1 person), Maintenance personnel for medical equipment (1 person) (for Each of the 3 Lv1Hs)	The First Field Training	Maintenance system and work flow will be understood.	—
To help establish a maintenance system and enhance management ability	<ul style="list-style-type: none"> • Existing maintenance practice will be checked, and a maintenance system flow, a work flow chart, and various formats utilising cases in Japan will be created. • Ledger of facility utilities and medical equipment (including daily checkup sheet) will be created. 	Maintenance personnel for medical equipment (1 person) Each department at the hospital (10 people) (for Each of the 3 Lv1Hs)	The Second and Third Field Training	Various formats about maintenance will be created utilising cases in Japan.	<ul style="list-style-type: none"> • Maintenance work planning • Maintenance system • Preventative maintenance planning • Ledger of facility and medical equipment
To help create and implement an annual maintenance plan	<ul style="list-style-type: none"> • How to create an annual maintenance plan will be taught. • How to prepare an annual budget will be taught. • How to place an order for replacement parts and the inventory method will be taught. 	Maintenance personnel for medical equipment (1 person) Accounting personnel (1 person) (for Each of the 3 Lv1Hs)	The Second and Third Field Training	Guidance on the creation of an annual maintenance plan, ledger of facility utilities, and an annual maintenance plan.	<ul style="list-style-type: none"> • Maintenance budget plan • Annual maintenance planning created by a technical cooperation project

(6) Resource Procurement Method to Implement Soft Component

Soft component shall be direct support type. There are no local consultants or facility / medical equipment maintenance companies in Zambia that are specialised in maintenance works for facilities and medical equipment. But, some personnel in Matero Lv1H and Chilenje Lv1H who participated soft component programme at the Phase 1 Project shall be involved, as well as provincial medical officers to give advice about solutions of problems through their experience during the soft component programme.

(7) Technical Assistance Implementation Process

Work schedule and implementation process of technical assistance is shown below.

Table 2-37 Work Schedule of Technical Assistance

■Work Schedule in Japan

Before First Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
	Contents
1	Creation of Maintenance System Draft and Materials for Guidance
2	
3	
4	Creation of Preventive Maintenance Planning Draft
5	
6	
7	Creation of Organisation Chart of the Maintenance System Draft Staff Assignment Plan of the Maintenance System Draft
8	
9	

0.45MM

■Work Schedule in Zambia

First Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
	Contents
1	Departure from Tokyo
2	Arrival at Lusaka
3	Meeting with MOH/PHO
4	Internal Meeting/Document Processing
5	Internal Meeting/Document Processing
6	Creation/Guidance/Meeting of Maintenance System of Chipata
7	Creation/Guidance/Meeting of Maintenance System of Kanyama
8	Creation/Guidance/Meeting of Maintenance System of Chawama
9	Creation of Preventive Maintenance Planning of Chipata
10	Creation of Preventive Maintenance Planning of Kanyama
11	Internal Meeting/Document Processing
12	Internal Meeting/Document Processing
13	Creation of Preventive Maintenance Planning of Chawama
14	Report to JICA/MOH
15	Departure from Lusaka
16	Arrival at Tokyo

0.53MM

■Work Schedule in Zambia

Second Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
	Contents
1	Departure from Tokyo
2	Arrival at Lusaka
3	Meeting with MOH/PHO/DHs
4	Reconfirmation of Maintenance Manual of Chipata
5	Reconfirmation of Maintenance Manual of Kanyama
6	Reconfirmation of Maintenance Manual of Chawama
7	Internal Meeting/Document Processing
8	Internal Meeting/Document Processing
9	Maintenance Training, Guidance of Daily and Periodic Checkups at Chipata
10	Maintenance Training, Guidance Operation Palan of Wastewater Treatment system at Chipata
11	Maintenance Training, Guidance of Daily and Periodic Checkups at Kanyama
12	Maintenance Training, Guidance Operation Palan of Wastewater Treatment system at Kanyama
13	Maintenance Training, Guidance of Daily and Periodic Checkups at Chawama
14	Internal Meeting/Document Processing
15	Internal Meeting/Document Processing
16	Maintenance Training, Guidance Operation Palan of Wastewater Treatment system at Chawama
17	Report to JICA/MOH
18	Departure from Lusaka
19	Arrival at Tokyo

0.63MM

■Work Schedule in Japan

After Third Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
	Contents
1	Creation of Maintenance Budget Planning Draft
2	
3	Creation of Facility Utility Ledge Draft
4	
5	Explanation and Meeting for JICA, Revision and Compilition of Final Report

0.25MM

■Work Schedule in Zambia

Third Field Training (Facility maintenance engineer I /Medical equipment management engineer /Facility maintenance engineer II)	
	Contents
1	Departure from Tokyo
2	Arrival at Lusaka
3	Meeting with MOH/PHO/DHs
4	Reconfirmation of Maintenance Manual/Guidance of Maintenance Budget Planning and Creation of Facility Utility Ledge of Chipata
5	Reconfirmation of Maintenance Manual/Guidance of Maintenance Budget Planning and Creation of Facility Utility Ledge of kanyama
6	Reconfirmation of Maintenance Manual/Guidance of Maintenance Budget Planning and Creation of Facility Utility Ledge of Chawama
7	Internal Meeting/Document Processing
8	Internal Meeting/Document Processing
9	Maintenance Training, Creation of Maintenance Budget Planning of Chipata
10	Maintenance Training, Creation of Facility Utility Ledge of Chipata
11	Maintenance Training, Creation of Maintenance Budget Planning of Kanyama
12	Maintenance Training, Creation of Facility Utility Ledge of Kanyama
13	Maintenance Training, Creation of Maintenance Budget Planning of Chawama
14	Internal Meeting/Document Processing
15	Internal Meeting/Document Processing
16	Maintenance Training, Creation of Facility Utility Ledge of Chawama
17	Report to JICA/MOH
18	Departure from Lusaka
19	Arrival at Tokyo

0.63MM

Work Staff at Japan

・ Before First Field Training: Facility maintenance engineer I, Medical equipment management

・ After Third Field Training: Facility maintenance engineer I, Medical equipment management

※All staff are the Third Grade

Guidance Staff in Zambia

・ First Field Training Facility maintenance engineer I, Medical equipment management
 ・ Second Field Training Facility maintenance engineer I, Medical equipment management
 ・ Third Field Training Facility maintenance engineer I, Medical equipment management
 Facility maintenance engineer II

※All staff are the Third Grade

Japanese consultant in charge of guidance will select personnel at the MOH, PHO and DHO who experienced Technical Assistance in the Phase 1 Project as instructors. The agreed content of guidance/cooperation and the whole schedule will be determined with parties involved at Chipata Lv1H, Kanyama Lv1H and Chawama Lv1H, and the implementation period of technical guidance will be sequentially adjusted while evaluating the input and outcome.

During the Project, a format system suited to the Project concerning the facility utilities will be created in Japan and readjusted in Zambia. For medical equipment, the format system created by the technical cooperation project will continue to be used in principle.

1) Advance Preparation in Japan

Documents shown as below shall be prepared in Japan to show the first workshop.

Explanation about various formats, workflow charts, others regarding the maintenance system for the assumed facilities.

2) First Field Training

Education will be done to leaders and staff members in facility / medical equipment maintenance department to strengthen maintenance system through workshops, and at the same time, the participants will shed light on problems lurking in current maintenance works to create an input planning idea. Then whether an acceptance system and a maintenance organisation of the hospitals have been established or not will be verified. In concrete terms, at the workshop, the participants will create an equipment ledger for facilities and medical equipment.

3) Second Field Training

After checking operation status of various formats and maintenance system created in the first field training, necessary adjustment will be given for system and various formats, and provided additional training as necessary.

The facility utilities (air conditioners / medical gas / water discharge disposal / receiving power system / generators / light electrical appliances, etc.) and medical equipment to be used in the Project have already been installed, so guidance shall be on how to create an equipment ledger more concretely using for newly built utilities and medical equipment.

4) Third Field Training

Final confirmation and adjustment for each ledger and format created during the field trainings will be conducted, and the participants will create a final maintenance plan proposal for newly built facilities and medical equipment according to the final training items prepared in Japan. In particular, they will prepare an annual maintenance plan / annual maintenance budget plan / spare parts management plan, and report the final version of a maintenance plan.

5) Tasks to Be Performed in Japan

By organising the results of the first, second, and third technical trainings final report will be created.

The following three engineers are to be sent as Japanese consultants in order to transfer technical skills to the hospitals:

Table 2-38 Soft Component Implementation Process Chart

Month	1	2	3	4	5	6	7	8	9	10	11	12	13
(Facility)													
Construction	■												
(Medical Equipment)													
Manufacture/ Procurement	■												
Transport						■							
Tax exemption/ Customs clearance								■					
Installation etc. Inspection/handover									■				
Soft Component □ In Japan ■ In Zambia													
						0.45MM	0.53MM			0.63MM		0.63MM	0.25MM

(8) Soft Component Outcome

Table 2-39 Soft Component Outcome

Item	Outcome
Daily and periodic checkups of facility utilities	• Daily and periodic checkups manual of facility utilities
Guidance on importance of a maintenance system	• Idea of the maintenance system • Organisation chart of the maintenance system • Staff assignment plan of the maintenance system • Ledger of the maintenance system (formats of technical cooperation projects)
Establish a maintenance system and enhance management ability	• Maintenance work planning • Preventative maintenance planning • Ledger of facility utilities and medical equipment
Creation and implementation of annual maintenance plan	• Ledger of equipment • Annual maintenance plan • Maintenance budget plan • Annual maintenance planning created by a technical cooperation project

(9) Responsibility of Zambia's Implementing Organisation

Since this soft component will be implemented to ensure self-reliant development of Zambia, all training should employ a method that will promote spontaneous activities on Zambia wherever possible. For this reason, it is essential that implementing organisation of Zambia fully understand and cooperate in this soft component.

Concretely speaking, each personnel member responsible in the MOH, PHO, DHO, the Chipata Lv1H, the Kanyama Lv1H and the Chawama Lv1H will first need to understand and take care of the targets and operating procedures of the Project. The most important thing is to allocate necessary personnel accordingly in order to implement soft component, and before implementing soft component, it will be necessary for the MOH to appoint facility maintenance engineers and medical equipment maintenance engineers with a certain level of technical ability. Japan will provide technical training and cooperation to these engineers through implementation of soft component. In addition, during implementation period and even after completion of the soft component, all persons responsible in implementing organisations, including superintendent, are required to continue to give training and perform management for maintenance of facility and medical equipment as responsible management of Chipata Lv1H, Kanyama Lv1H and Chawama Lv1H.

2-2-4-9 Implementation Schedule

Figure 2-38 shows the work implementation process after concluding the exchange of notes and grant agreement. The contents consist of detailed design and bidding tasks by a consultant, construction works by contractors, and construction administration work by a consultant.

(1) Detailed Design Tasks

A consultant agreement regarding detailed design (preparation of bidding documents) for the Project will be made between the MOH in Zambia and a consultant company of a Japanese corporate body, and the contract document will be approved by JICA. After this, the consultant will prepare bidding documents through discussions with the MOH based on the investigation report, which shall be approved by the MOH.

The detailed design tasks (preparation of bidding documents) are expected to take four months to complete.

(2) Bidding Tasks

The bidding tasks are expected to take four months to complete.

(3) Construction Works by Contractors and Construction Administration Work by the Consultant

After the work contract is signed, the contractors will initiate the works. At the same time, the consultant will start the construction administration work.

The work period is expected to be twenty months for the Chipata Lv1H and the Chawama Lv1H and twenty-two months for the Kanyama Lv1H. The tables below show a schedule of the Project:

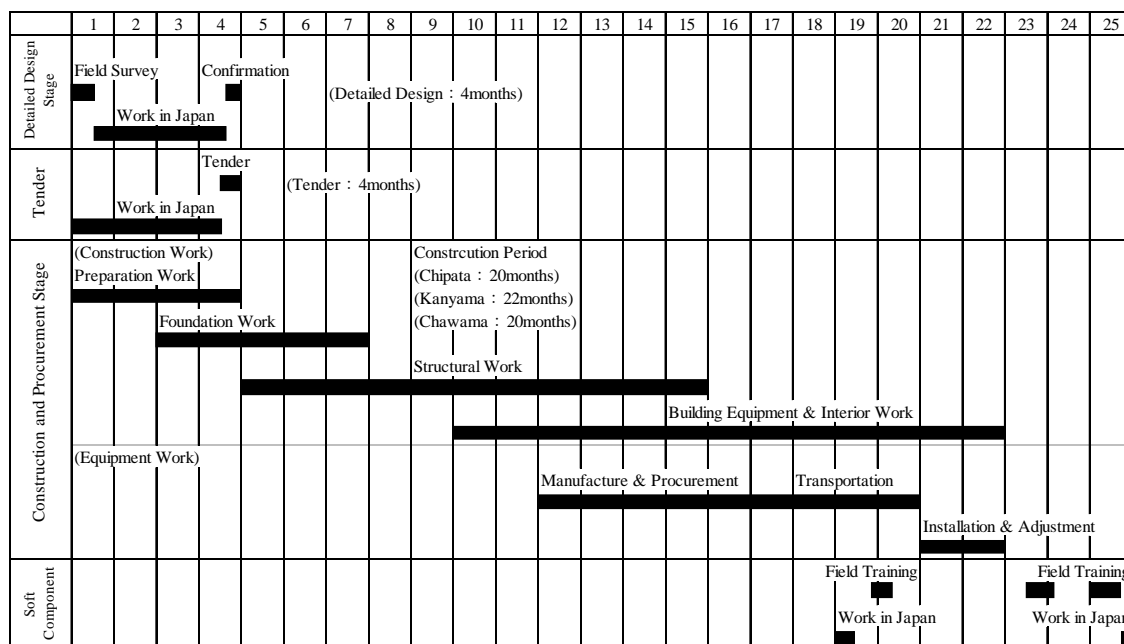


Figure 2-38 Project Schedule

2-3 Obligations of Recipient Country

The main items that Zambia is in charge of are as follows:

(1) Procedures

- 1) To file and obtain any necessary approvals and licenses to obtain building permission regarding the Project
- 2) To issue banking arrangement (B/A) and authority to pay (A/P) and bear any additional charges for services related to the procedures
- 3) To ensure prompt discharge of cargo containing imported equipment, tax exemption, and customs clearance, and to ensure prompt inland transport
- 4) For the Japanese who attempt to supply necessary equipment and accomplish tasks according to the certified contract, to provide full facilities necessary to enter and stay in Zambia
- 5) For the Japanese who attempt to supply necessary equipment and accomplish tasks according to the certified contract, to exempt them from all customs charges and various taxes in Zambia
- 6) To ensure that the facilities built and the equipment procured with gratuitous financial aid are properly and effectively managed and maintained
- 7) To make arrangements, sign contracts, and bear necessary costs for the electricity, telephone, gas, and sewage related to the Project

(2) Tax Exemption

It is agreed that the MOH will ensure that all taxes imposed on Japanese companies, the Japanese, and equipment related to the Project will be exempted by taking any necessary actions toward the relevant organisations.

Items subject to tax exemption in Zambia are those that are necessary for implementing the Project only, as specified in the Customs and Excise Regulations (2000, statutory instrument). Especially for construction equipment, if 'Temporary Importation' is applied for based on the premise that it will be brought back after the Project has been completed, taxes will be exempted, but if its usage is going to continue in Zambia after the Project has been completed, the corresponding customs must be paid.

For the MOH to arrange tax exemption with the Bureau of Budget in the Ministry of Finance and National Planning, we need to prepare an endorsement letter from the MOH, a list of imported equipment, and a bilateral agreement document. A bill of lading is required when the

Zambian Revenue Authority (ZRA) conducts inspections of imported goods upon request of the Bureau of Budget.

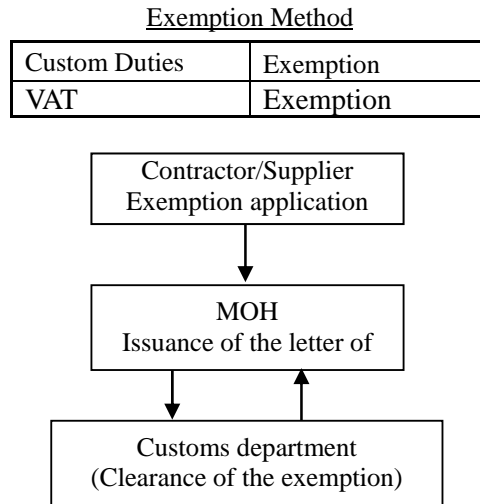


Figure 2-39 Flowchart of Tax Exemption

(3) Related Construction

The table below shows the construction and its timeline to be taken care of by Zambia:

Table 2-40 **Zambian Side Scope of Work and Schedule (Before the Tender)**

1) Common

NO	Items	Deadline
1	To Open Bank Account (Banking Arrangement (B/A))	Within 1 month after G/A
2	To implement Environmental Impact Assessment (EIA)	Before start of the construction
3	To secure the following lands (Chipata, Kanyama, Chawama) 1) Project sites 2) Construction vehicles routes 3) Temporary construction yard and stock yard near the Project area (Chipata:, Kanyama:, Chawama:, 1,200 m ² respectively)	Before notice of the tender document
4	To obtain the planning, zoning, building permit	
5	To submit the result of Detail Design	End of Detail Design
6	To maintain functions in the demolished facilities until the time new facilities function	-

(B/A: Banking Arrangement)

2) Chipata

NO	Items	Deadline
1	To clear, level and relocate utilities Storage	Before notice of the tender document
2	To clear, level and relocate Chlorine house	
3	To clear and level Tent and WC	
4	To clear, level and relocate utilities EHT and VCT	
5	To clear, level and relocate utilities Container store	
6	To clear, level and relocate TB shelter	
7	To clear, level and relocate TB/X-ray	
8	To relocate telephone cabling	
9	To clear and level part of boundary wall	
10	To clear and level existing some walls, underground foundations, and trees	

3) Kanyama

NO	Items	Deadline
1	To clear and level 4 staff houses, septic tank and soak tank	Before notice of the tender document
	To notice to the residents	
	To make the staff move out	
	To start clearing house and level housing area	
2	To relocate Pharmacy storage	
3	To clear and level Trees on Project site	
4	To clear and level part of boundary wall	
5	To clear fences for staff houses	
6	To clear Existing electrical power cable for 4 staff houses	

4) Chawama

NO	Items	Deadline
1	To clear and level Post office, ATM, and trees on Project site	Before notice of the tender document
2	To relocate Pharmacy storage	
3	To relocate, clear and level Generator house	
4	To relocate, clear and level Guard house	
5	To relocate to west side, clear and level Mortuary	
6	To relocate, clear and level TB	
7	To clear and level WC	
8	To clear and level some boundary wall	
9	To relocate Existing electrical power cable and Transformer	
10	To construct boundary wall and gate on Project site	

Table 2-41 **Zambian Side Scope of Work and Schedule (During the Project Implementation)**

1) Common

NO	Items	Deadline	
21	To bear the following commissions to a bank of Japan for the banking services based upon the B/A 1) Advising commission of A/P	Within 1 month after the signing of the contract	
	2) Payment commission for A/P	Every payment	
22	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country 1) Tax exemption and customs clearance of the products at the port of disembarkation	During the Project	
	2) Internal transportation from the port of disembarkation to the Project site		
23	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		
24	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		
25	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		
26	To facilitate the exemption from the registration of the Project related Japanese contractors and consultants with the National Council of the Construction or other relevant agencies		Before Construction
27	To submit Project Monitoring Report		Every Month

(A/P: Authorization to pay)

2) Chipata

NO	Items	Deadline
21	Electricity Power supply to new substation and metering devices for the Project	6 months Before Completion of the Construction
22	Water Supply Water supply to the Project site (from a well)	
23	Drainage Connection work of storm water drainage in the Project site to existing off-site storm water open ditches	
24	Telephone system Provide telephone main trunk line to the main distribution frame/panel (MDF)	

3) Kanyama

NO	Items	Deadline
21	Electricity Power supply to new substation and metering devices for the Project	6 months Before Completion of the Construction
22	Water Supply Water supply to the Project site (from a well)	
23	Drainage Connection work of storm water drainage in the Project site to existing off-site storm water open ditches	
24	Telephone system Provide telephone main trunk line to the main distribution frame/panel (MDF)	

4) Chawama

NO	Items	Deadline
21	Electricity Power supply to new substation and metering devices for the Project	6 months Before Completion of the Construction
22	Water Supply Water supply to the Project site (from a well)	
23	Drainage Connection work of storm water drainage in the Project site to existing off-site storm water open ditches	
24	Telephone system Provide telephone main trunk line to the main distribution frame/panel (MDF)	

Table 2-42 **Zambian Side Scope of Work and Schedule (After the Project)**

1) Common

NO	Items	Deadline
31	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grand Aid 1) Allocation of maintenance cost 2) Operations and maintenance structure 3) Routine check/Periodic inspection 4) Allocation of sufficient staff appropriately	After completion of the construction
32	To provide General furniture, linen, and curtains	
33	To move to new facilities	
34	To construct Exterior Work (landscaping, planting, etc.)	

2) Chipata

NO	Items	Deadline
41	To renovate existing OPD as Physiotherapy	After completion of the construction
42	To renovate existing OP theatre as Casualty	
43	To renovate a part of existing ART as MCH (if necessary)	

3) Kanyama

NO	Items	Deadline
41	To renovate existing OPD as MCH (if necessary)	After completion of the construction
42	To renovate existing OP theatres Physiotherapy as Casualty	
43	To renovate existing Male, Female, and Paediatrics Ward as Paediatrics Ward	
44	To renovate existing Ante-/Post-natal and Delivery Ward as Isolation Ward (if necessary)	
45	To renovate existing ART as Administration (if necessary)	

4) Chawama

NO	Items	Deadline
41	To renovate OP Theatre as Casualty	After completion of the construction
42	To renovate OPD as MCH (if necessary)	
43	To clear and level Physiotherapy (if necessary)	

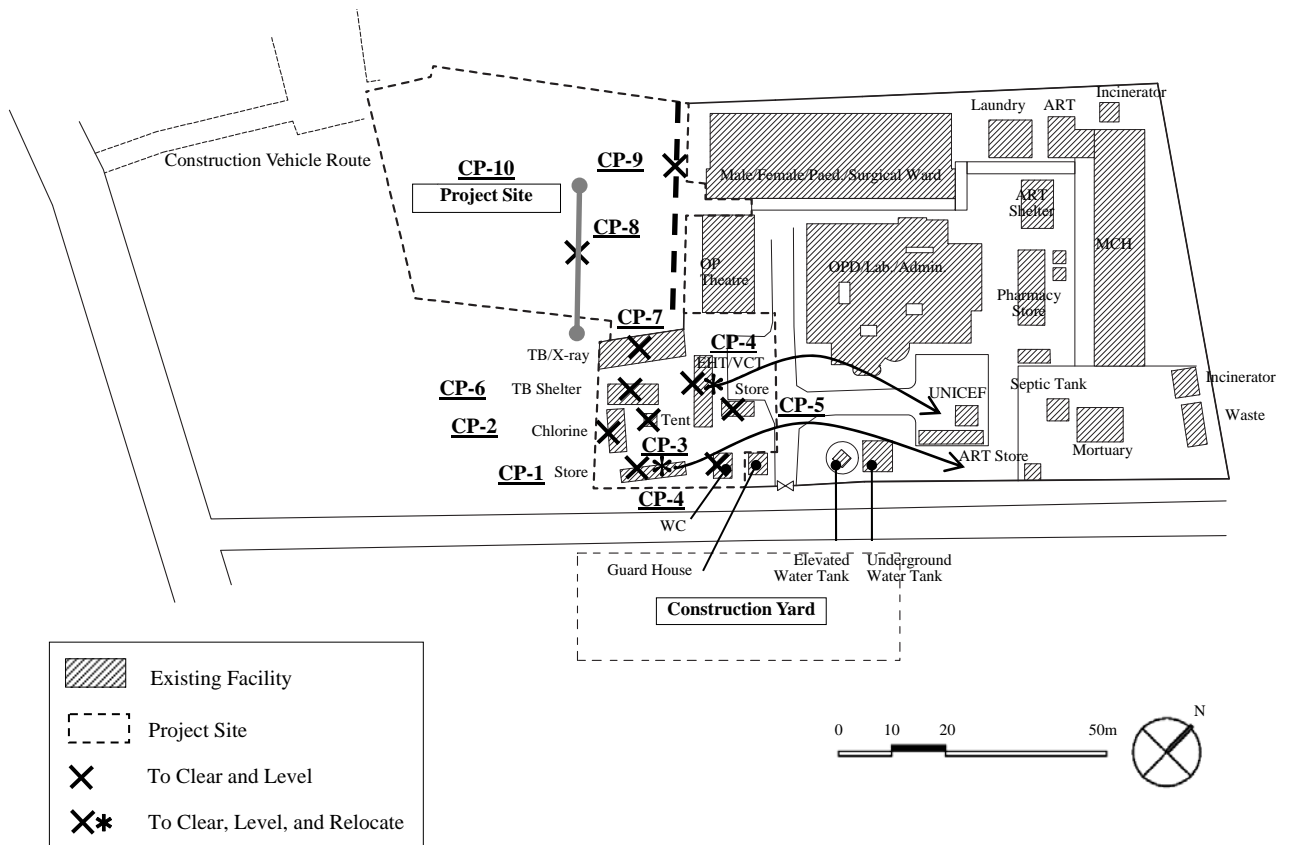


Figure 2-40 Chipata Lv1H Zambian Scope of Work (Before Tender)

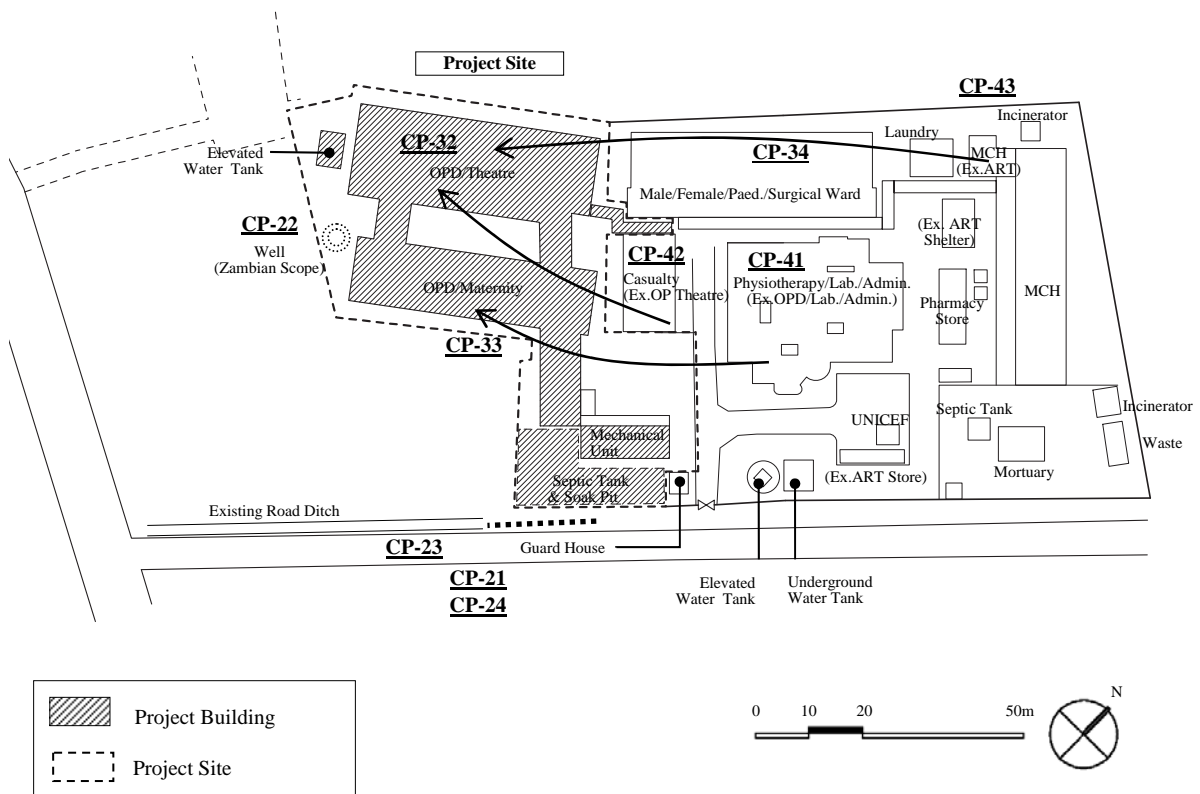


Figure 2-41 Chipata Lv1H Zambian Scope of Work (During and After Construction)

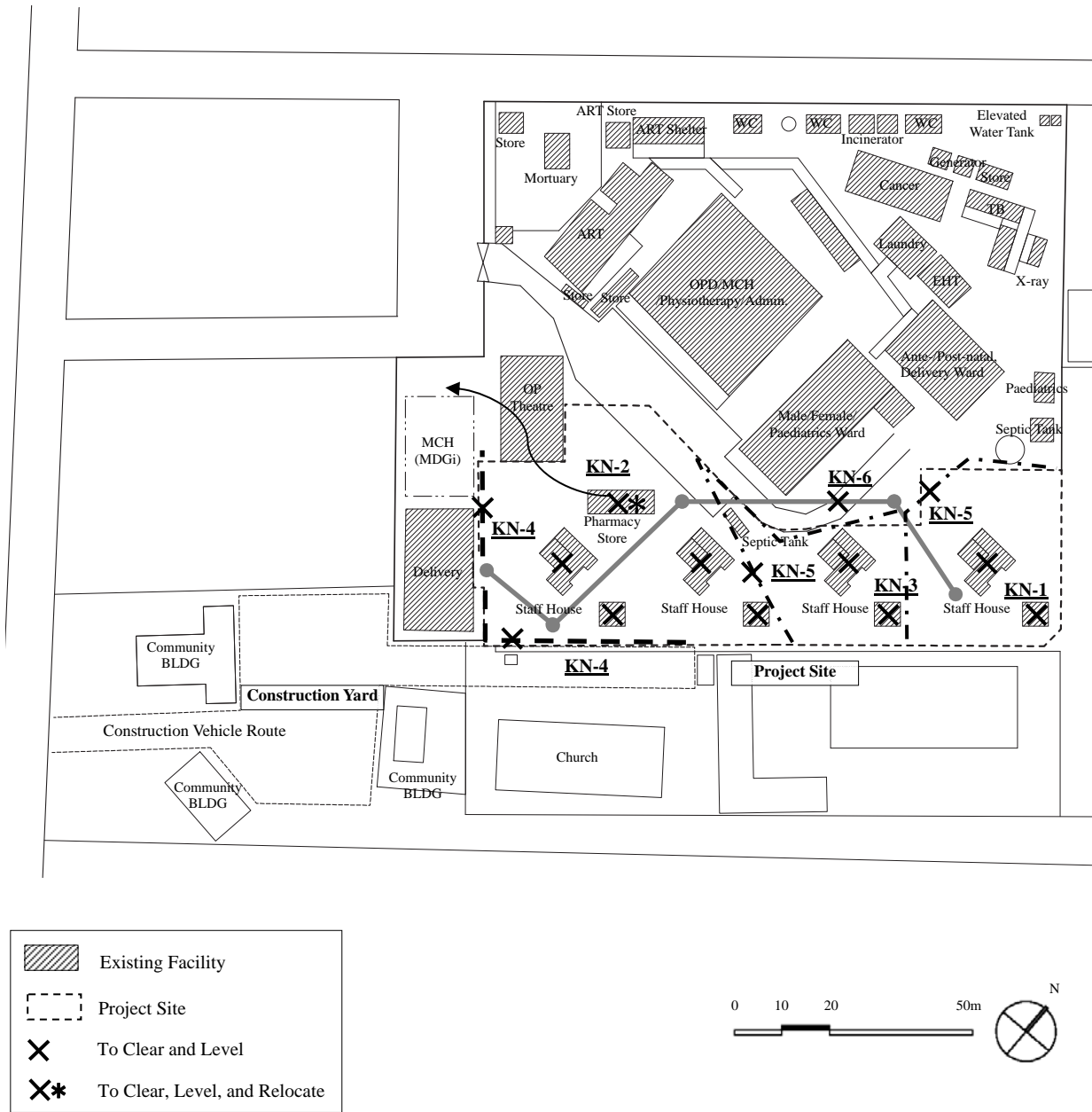


Figure 2-42 Kanyama Lv1H Zambian Scope of Work (Before Tender)

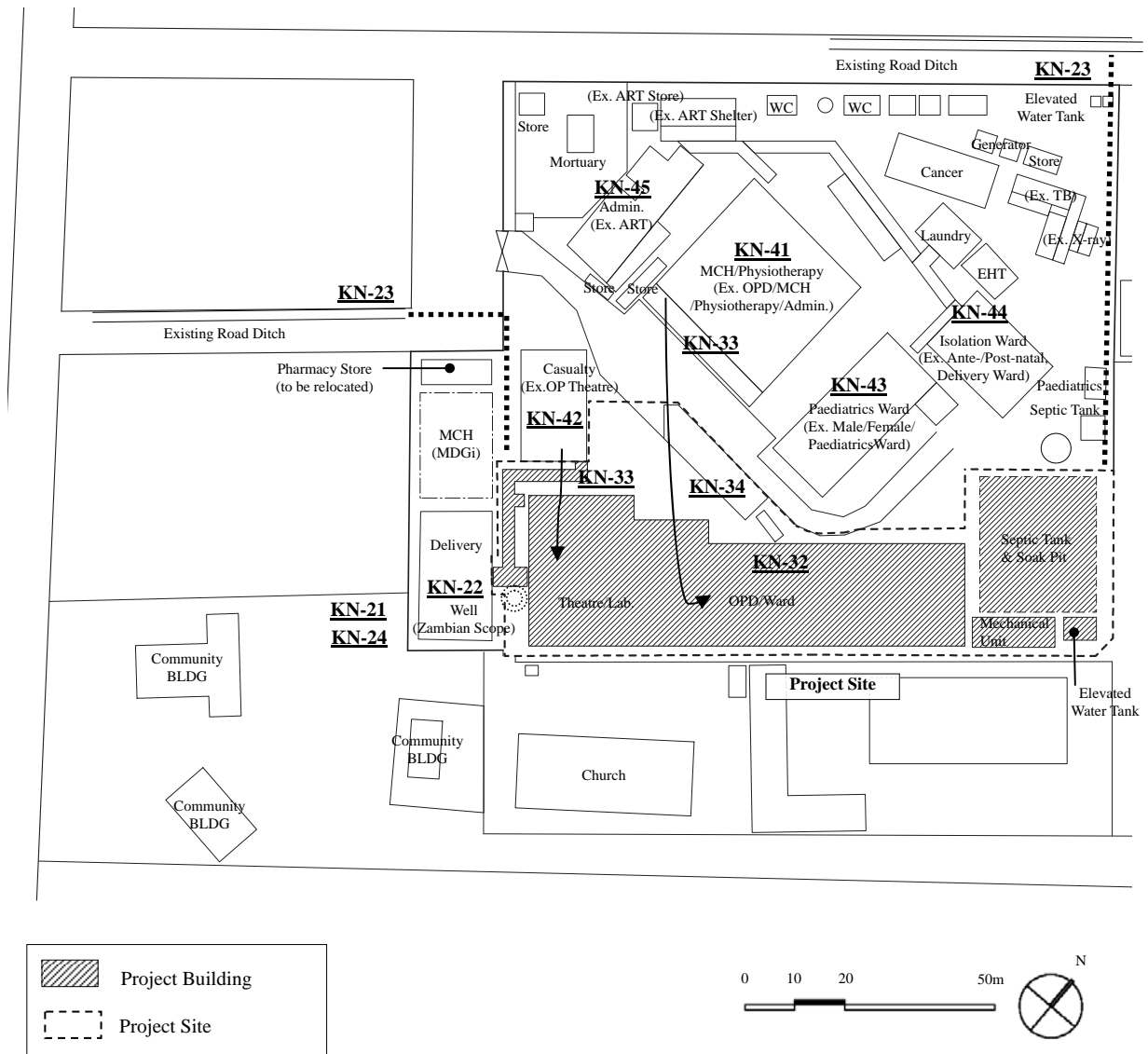


Figure 2-43 Kanyama Lv1H Zambian Scope of Work (During and After Construction)

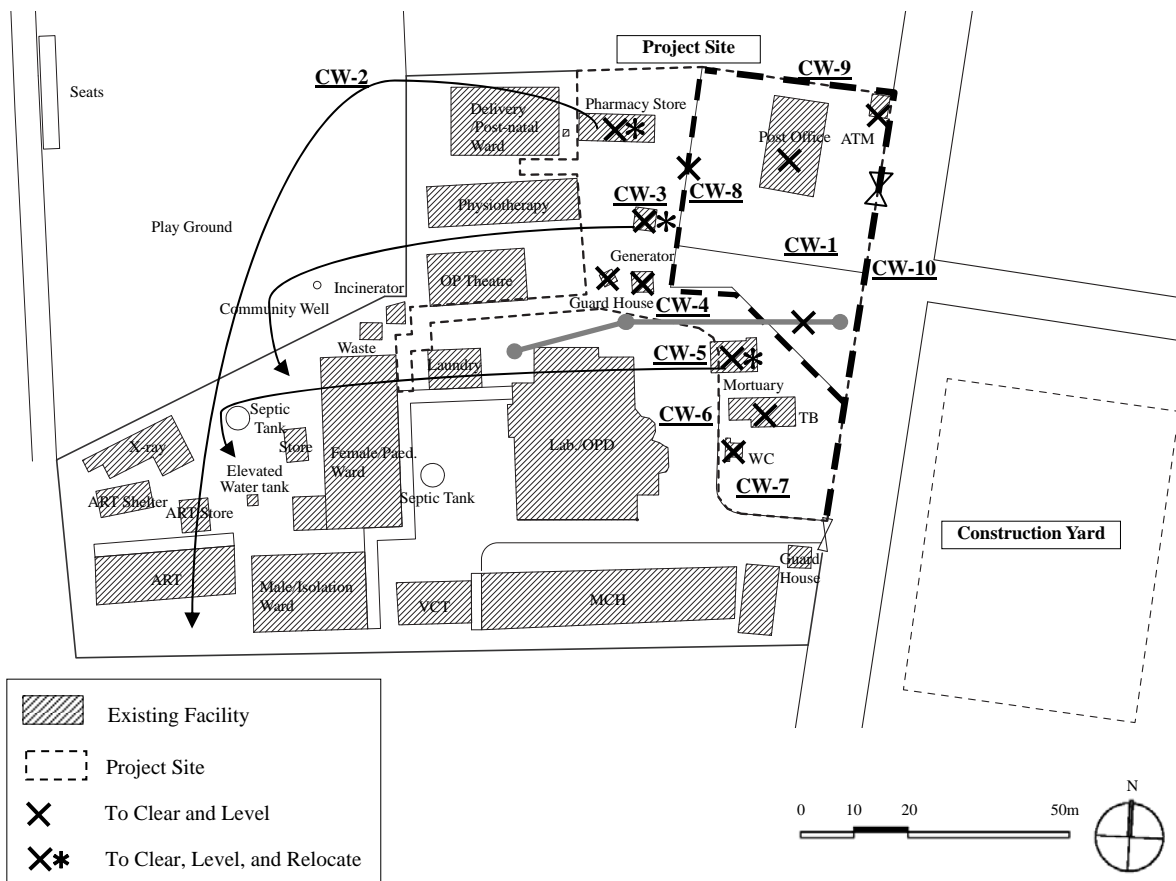


Figure 2-44 Chawama Lv1H Zambia Scope of Work (Before Tender)

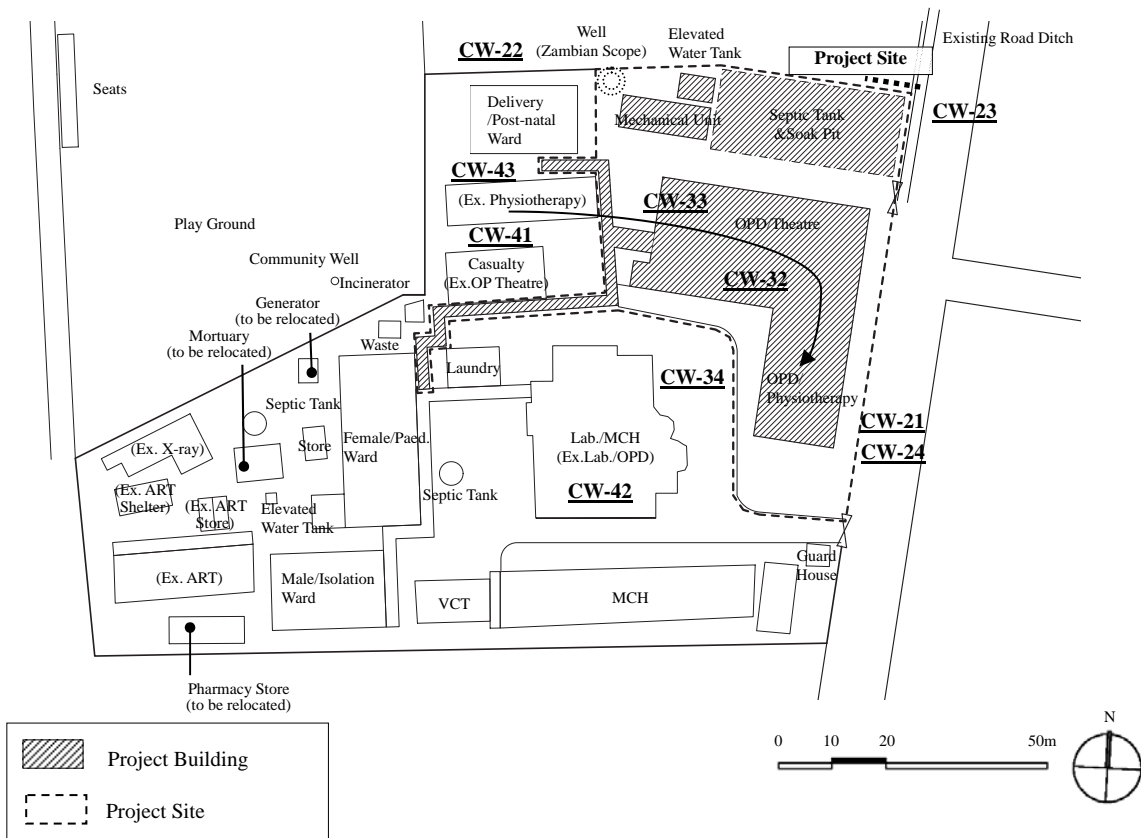


Figure 2-45 Chawama Lv1H Zambia Scope of Work (During and After Construction)

2-4 Project Operation Plan

(1) Management / Maintenance Planning

For the facilities to be utilised most effectively after the construction of the facilities and medical equipment has been completed, it is imperative that Zambia take care of the maintenance work for the facilities and medical equipment continuously.

To maintain the facility functions, including the existing system in a sustainable way, the following items are required to use and maintain medical equipment and facilities upgraded in the Project.

- ① To hire mechanical, electrical, and medical equipment technicians for the level 1 hospitals
- ② To change the mindset of each staff member, enhance their technical abilities
- ③ To strengthen the coordination function between the maintenance department and the DHO, PHO, and level 1 hospital
- ④ To utilise tool-supplementing maintenance activities considering preventive maintenance, and establish an annual budget and maintenance plan to support these activities

Technical assistance (Soft component) also will be introduced in ②, ③ and ④.

1) Facilities

At present, two Environmental Health Officer (④ and ⑤ in the table below) is in charge of maintenance for each of the level 1 hospitals under the supervision of a matron. They are responsible for maintenance of water supply and sewage, waste disposal, and teaching public hygiene to the whole assigned region by visiting communities sometimes. Therefore, a public hygiene administrator in the DHO visits the level 1 hospitals on a regular basis to check the maintenance situation. For air conditioners, exhaust fans, and electrical matters, there are no staff responsible for them in level 1 hospitals, so a member of the DHO in charge of equipment maintenance comes to check the maintenance situation regularly. When an electrical issue occurs, a matron calls the DHO and the person in charge will then visit to make a repair. Since there is no special equipment in the current facilities other than a private electric generator, it seems that they have managed to conduct maintenance work using the current system.

The MOH planned to allocate new maintenance staff members with special knowledge to provide appropriate medical services as level 1 hospital after the Project completed. The following shows an organisation chart relating to maintenance work (Figure 2-47) and job descriptions of new maintenance staff.

The following chart shows how the MOH, PHO, DHO and each department in medical facilities (level 1, 2 and 3 hospitals) coordinates with and complements one another for maintenance:

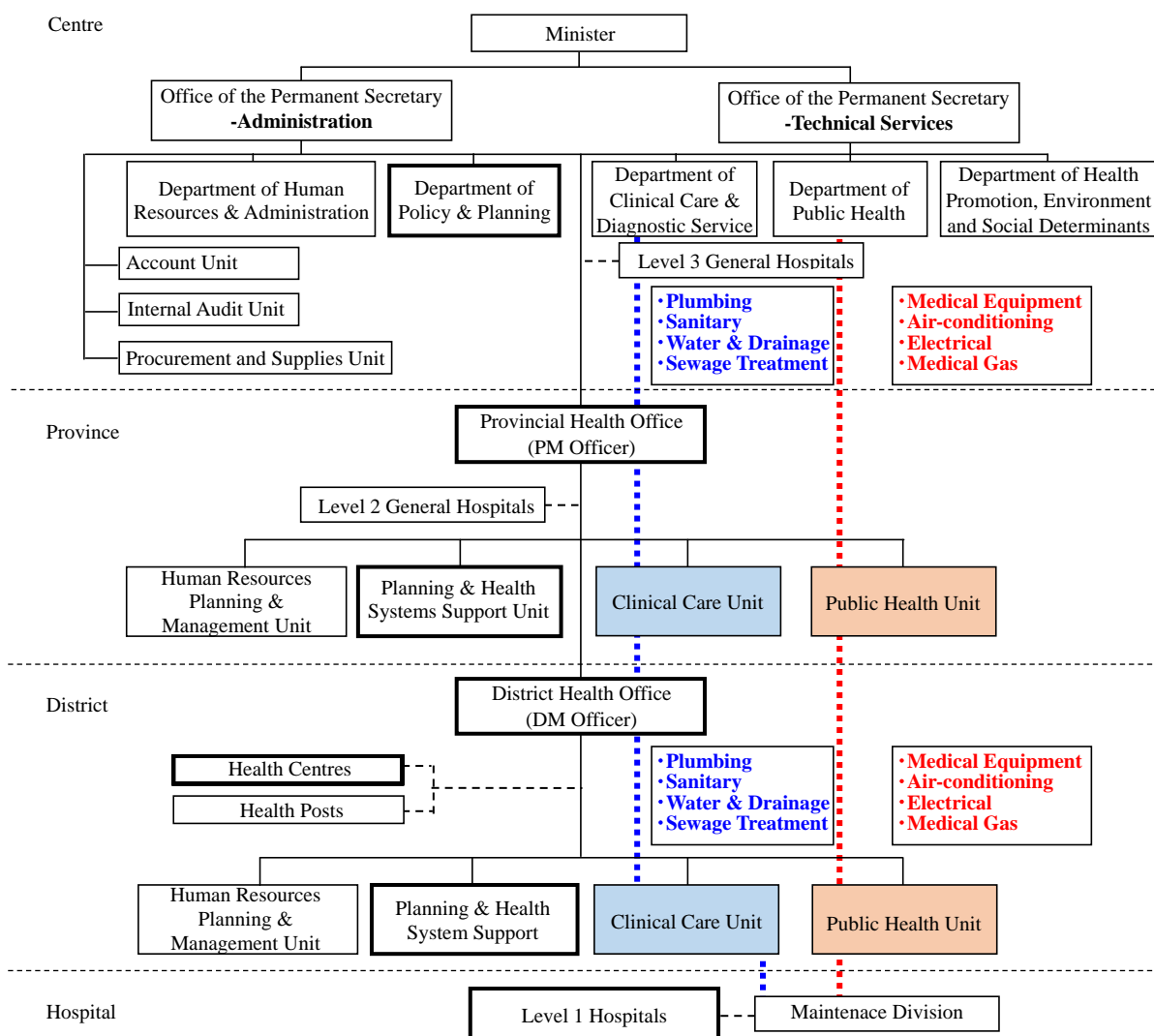


Figure 2-47 Organisation Chart of Coordination of Each Department for Maintenance

2) Medical Equipment

- It is necessary to set the scale and specifications based on the hospital management capacity on the *Zambian* side taking into account the availability of financial resources for operation and maintenance of medical equipment, budgetary measures, personnel deployment, and technical standards.
- The functions required of level 1 hospital, the hospital management plan, the capacity for maintenance of the *Zambian* side will be duly reviewed, and consideration will be given to the optimum medical equipment and specifications.
- Medical equipment should be the minimum basic equipment with low operating costs and simple maintenance required at level 1 hospital.

(2) Estimation of Approximate Project Cost

A number of buildings were seen under construction in the capital city, Lusaka, where the Project is taking place, and it seems that the situation surrounding the construction industry is relatively good. According to the International Monetary Fund (IMF), the consumer price index increased by 6.978% in 2013, 7.811% in 2014, and 10.107% in 2015, and is expected to keep increasing by 12.500% in 2016, 9.901% in 2017, and 7.651% in 2018.

The price of construction materials in Zambia is greatly influenced by the South African Republic, the main import trading partner. Along with the impacts of international price trends where the price of raw materials including oil and iron ore is on the rise, the overall price in Zambia is expected to keep rising in the future.

Considering the scale of the buildings (total of the three sites: about 9,900 m²) and the particularity of the application (medical facilities), the unit price of the project construction will be about 300,000 yen / m².

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Expenses to be Borne by Zambia

The total expenses to be borne by Zambia will be 3,968 thousand ZMW (about 38.2 million yen) and the breakdown is shown below:

Table 2-43 Expenses to Be Borne by Zambia (Chipata Lv1H)

Unit: 1,000ZMW

Construction Expense Item	Expenses
a. To clear, level and relocate utilities Storage	10
b. To clear, level and relocate Chlorine house	20
c. To clear and level Tent and WC	15
d. To clear, level and relocate utilities EHT and VCT	30
e. To clear, level and relocate utilities Container store	10
f. To clear, level and relocate TB shelter	30
g. To clear, level and relocate TB/X-ray	30
h. To relocate telephone cabling	20
i. To clear and level part of boundary wall	60
j. To clear and level existing some walls, underground foundations, and trees	100
k. Electricity: Power supply to new substation and metering devices for the Project	55
l. Water Supply: Water supply to the project site (from a well)	200
m. Drainage: Connection work of storm water drainage in the project site to existing off-site storm water open ditches	300
n. Telephone system: Provide telephone main trunk line to the main distribution frame/panel (MDF)	5
o. Relocation to the new buildings (incl. purchase of furniture and supplies)	120
Total	1,005

Table 2-44 Expenses to Be Borne by Zambia (Kanyama Lv1H)

Unit: 1,000ZMW

Construction Expense Item	Expenses
a. To clear and level 4 staff houses, septic tank and soak tank	200
b. To relocate Pharmacy storage	10
c. To clear and level Trees on project site	10
d. To clear and level part of boundary wall	30
e. To clear fences for staff houses	10
f. To clear Existing electrical power cable for 4 staff houses	30
g. Electricity: Power supply to new substation and metering devices for the Project	55
h. Water Supply: Water supply to the project site (from a well)	200
i. Drainage: Connection work of storm water drainage in the project site to existing off-site storm water open ditches	350
j. Telephone system: Provide telephone main trunk line to the main distribution frame/panel (MDF)	8
k. Relocation to the new buildings (incl. purchase of furniture and supplies)	180
Total	1,083

Table 2-45 Expenses to Be Borne by Zambia (Chawama Lv1H)

Unit: 1,000ZMW

Construction Expense Item	Expenses
a. To clear and level Post office, ATM, and trees on project site	200
b. To relocate Pharmacy storage	10
c. To relocate, clear and level Generator house	200
d. To relocate, clear and level Guard house	15
e. To relocate to west side, clear and level Mortuary	500
f. To relocate, clear and level TB	10
g. To clear and level WC	10
h. To clear and level some boundary wall	60
i. To relocate Existing electrical power cable and Transformer	150
j. To construct boundary wall and gate on project site	300
k. Electricity: Power supply to new substation and metering devices for the Project	55
l. Water Supply: Water supply to the project site (from a well)	200
m. Drainage: Connection work of storm water drainage in the project site to existing off-site storm water open ditches	45
n. Telephone system: Provide telephone main trunk line to the main distribution frame/panel (MDF)	5
o. Relocation to the new buildings (incl. purchase of furniture and supplies)	120
Total	1,880

As a procedure-related cost, Zambia will also have to assume a figure about 4 million yen, which is needed for issuing the banking arrangement (B/A) and authority to pay (A/P) with accompanying charges for services.

Accumulation Conditions

- ① Start Point: March 2016
- ② Exchange Rate: 1 USD = 119.47 yen
1 ZMW=9.623 yen
- ③ Construction Period: The detailed design, bidding, and construction timeline are as presented in the implementation schedule of the Project.
- ④ Others: The Project will be implemented according to the grant aid system of the government of Japan.

2-5-2 Operation and Maintenance Cost

(1) Maintenance Cost

Taking into consideration an expected reduction in electricity charges due to the introduction of a high-voltage receiving power system and an efficient air conditioning system, the maintenance costs of the project facilities will be as follows. The table below presents preliminary calculation results for annual maintenance costs of the project facilities for the first year, second year, and beyond.

Chipata Level 1 Hospital (Lv1H)

Table 2-46 Calculation Results of Maintenance Costs

Unit: ZMW

Expense Item	First Year	Second Year and Beyond
① Electricity Charge	125,016	125,016
② Phone Charge	11,736	11,736
③ Generator Fuel Charge	27,740	27,740
④ Oxygen Gas Charge	14,256	14,256
⑤ Building Running Cost	0	15,144
⑥ Outsourcing Cost for Facility Equipment Maintenance	0	36,000
Subtotal ① - ⑥ (Facility Maintenance Cost)	178,748	229,892
⑦ Medical Equipment Maintenance Cost	337,084	337,084
Total ① -⑦	515,832	566,976

① Electricity Charge..... 125,016 ZMW / Year

The amount of electricity used in the project facilities is estimated as follows based on the scale and properties of the facilities. The amount of electricity to be used due to the extensions is calculated on the assumption that about 60% of the installed capacity (200 kVA) will be the electricity load capacity (120 kVA) on average with a demand factor of 40%.

Considering the application of the facilities as a hospital, the operating time is assumed to be 24 hours / day, 30 days / month, and 12 months / year.

Table 2-47 Estimated Amount Electricity Used

	Transformer Capacity (kVA)	Electricity Load Capacity (kVA)	Amount of Electricity Used per Hour (kW/h)
Newly Built Facilities	200	120	48

Demand Factor: 0.4

• Electricity Rate Structure

Basic Electricity Rate: 50 ZMW/Month

Meter Rate: 0.3ZMW/kWh

- Electricity Charge

Table 2-48 Electricity Charge

	Charge (ZMW)	Amount Used (kW/h)	Hours (h / day)	Days	Months	Total (ZMW)
Basic Rate	50	—	—	—	12	600
Meter Rate	0.3	48	24	30	12	124,416
Total						125,016

- ② Phone Charge 11,736 ZMW/ Year

The charge for fixed-line phones will depend on how many times the phones are used, so the charge is calculated as follows based on assumed use frequency in each facility.

- Rate Structure

Domestic Call Rate: 1.2 ZMW /min

International Call Rate: 86 ZMW /min

Table 2-49 Phone Charge

Pay-as-you-go	Charge (ZMW)	Calling Time (min / call)	Number of Calls (calls / day)	Days	Months	Total (ZMW)
Domestic	1.2	1	20	30	12	8,640
International	86	1	0.1	30	12	3,096
						11,736

- ③ Generator Fuel Charge..... 27,740 ZMW / Year

According to the hearing conducted on site, the actual frequency of power cut through a whole year is twice a week and each power cut lasts for about two hours. Therefore, the fuel charge is calculated on the assumption that the generator operates for two hours per power cut event.

The generator capacity in the Project is around 100 kVA, and the load factor during use of the generator is assumed to be 60% of the rated capacity on average.

For the frequency of power cut, it is assumed that the situation at the time of the hearing on site will continue into the future.

- Rate Structure

Amount of Generator Fuel Consumption: 28 L/h

Fuel Unit Price: 8.6 ZMW /L

- Fuel Charge

Table 2-50 Generator Fuel Charge

Season	Charge (ZMW)	Amount Used (L/h)	Hours (h)	Power Cut (events / month)	Months	Load Factor	Annual Amount Used (L)	Total (ZMW)
Whole Year	8.6	28	2	8	12	0.6	3,225.6	27,740
Total								27,740

④ Oxygen Gas Charge..... 14,256 ZMW /Year

Oxygen will be used in the surgery room, postnatal room, and other necessary rooms. The amount of oxygen used in the newly built facilities is estimated as follows:

Table 2-51 Amount of Oxygen Gas Power

Name of Facilities	Application	Amount Used per Month (cylinders / month)
Newly Built Facilities	Surgery room, postnatal room, etc.	10
Total		10

• Rate Structure

O₂ Gas Charge: 198 ZMW / cylinder

• Oxygen Gas Charge

Table 2-52 Oxygen Gas Charge

	Charge (ZMW)	Amount Used (cylinders / month)	Months	Annual Amount Used (cylinders)	Load Factor	Total (ZMW)
O ₂ Gas Charge	198	10	12	120	0.6	14,256
Total						14,256

⑤ Building Running Cost 15,144 ZMW / Year

Materials are selected relatively easy to maintain for the buildings in the Project including external and internal finishing. Accordingly, it is assumed that the building running cost required for maintenance of the interior and exterior of the buildings, electricity, purchasing of repair / replacement parts for water supply / discharge, and air conditioning devices will be approximately 6 ZMW /m²/year, which is about a half to a third of similar examples currently in use in Japan. This cost will be needed from the second year or beyond.

Table 2-53 Building Running Cost

	Cost (ZMW /m ² /year)	Area (m ²)	Days	Months	Load Factor	Total (ZMW)
Building Running Cost	6	3,155	—	—	0.8	15,144
Total						15,144

⑥ Outsourcing Cost for Main Equipment Maintenance..... 36,000 ZMW / Year

In the Project, it is necessary to outsource the maintenance work for the main equipment, and the cost is estimated as follows. The calculation is based on discussions held with a local maintenance company.

Table 2-54 Estimated Outsourcing Cost for Main Equipment Maintenance

Equipment System	Maintenance Outsourcing Cost (ZMW)	Periodic Check Frequency
Air Conditioner	12,000	Once a Year
Medical Gas System	6,000	Once a Year
Generator / Receiving Transformer	12,000	Once a Year
Treatment of Experiment Drainage Water	6,000	Once a Year
Total	36,000	

⑦ Medical Equipment Maintenance Cost 337,084 ZMW /year

Medical equipment planning is established mainly with a view to procuring the necessary equipment to meet the demands for medical services and supplementing medical equipment which is shortage. The scope of the planning is kept to a manageable level so that the MOH can perform maintenance. Therefore, the MOH needs to consider how to secure a budget for the increase in medical equipment maintenance cost due to equipment procured for the newly built facilities. The expected cost increase through the Project will be about 337,084 ZMW.

Table 2-55 Medical Equipment Maintenance Cost

Chipata Lv1H

Unit : USD

Code	Name of Medical Equipment	Q'ty	Content	Per Year Maintenance Costs	Total
(1) Operation Room Equipment					
	Vital signs monitor, portable	2	Disposable electrode, Nasal-oral adapter, Airway adapter, Disposable transducer, Recording paper,	\$2,762.00	\$5,524.00
	Suction pump, electrical	2	Suction catheter, Tube for suction cup and curette	\$833.00	\$1,666.00
	Subtotal				\$7,190.00
(2) Dental Equipment					
	Dental film processor	1	Develop and fixer set, Dental X-ray film	\$222.00	\$222.00
	Dental light curing unit	1	Handpiece	\$32.00	\$32.00
	Subtotal				\$254.00
(3) Lab Equipment					
	Microhaematocrit centrifuge	1	Hematocrit capillary tube, Seal	\$281.00	\$281.00
	pH meter	1	Electrode inner solution, Standard solution	\$147.00	\$147.00
	Subtotal				\$428.00
(4) Other Equipment					
	Automatic film processor	1	Developer solution, X-ray film	\$15,475.00	\$15,475.00
	Ultrasonic diagnostic device	1	Recording paper, Ultrasound gel	\$1,232.00	\$1,232.00
	Ultrasonic diagnostic device (Mobile type)	1	Ultrasound gel	\$512.00	\$512.00
	Transport incubator	1	Filter	\$265.00	\$265.00
	Infant warmer	3	Probe pad	\$386.00	\$1,158.00
	Suction pump, electric	5	Bubble tube	\$121.00	\$605.00
	Water distiller	2	Salt for water softener	\$134.00	\$268.00
	Autoclave, electric, 400 liters	1	Recording paper, Ink ribbon, Salt for water softener	\$1,264.00	\$1,264.00
	Glucometer	3	Lancet and tip	\$367.00	\$1,101.00
	Subtotal				\$21,880.00
	(1)+(2)+(3)+(4)		Total (Conversion 337,084 ZMW)		\$29,752.00

*US\$1=11.3298 Kwacha, translated at the OANDA on 17th March 2016 (<http://www.oanda.com/lang/ja/currency/coverter/>)

Kanyama Level 1 Hospital (Lv1H)

Table 2-56 Calculation Results of Maintenance Costs

Unit: ZMW

Expense Item	First Year	Second Year and Beyond
① Electricity Charge	156,120	156,120
② Phone Charge	10,008	10,008
③ Generator Fuel Charge	27,740	27,740
④ Oxygen Gas Charge	8,553	8,553
⑤ Building Running Cost	0	24,396
⑥ Outsourcing Cost for Facility Equipment Maintenance	0	30,000
Subtotal ①~⑥ (Facility Maintenance Cost)	202,421	256,817
⑦ Medical Equipment Maintenance Cost	332,246	332,246
Total ①~⑦	534,667	589,063

① Electricity Charge..... 156,120 ZMW /Year

The amount of electricity used in the target facilities is estimated as follows based on the scale and properties of the facilities. The amount of electricity to be used due to the extensions is calculated on the assumption that about 75% of the installed capacity (200 kVA) will be the electricity load capacity (150 kVA) on average with a demand factor of 40%.

Considering the application of the facilities as a hospital, the operating time is assumed to be 24 hours / day, 30 days / month, and 12 months / year.

Table 2-57 Estimated Amount Electricity Used

	Transformer Capacity (kVA)	Electricity Load Capacity (kVA)	Amount of Electricity Used per Hour (kW/h)
Newly Built Facilities	200	150	60

Demand Factor: 0.4

• Electricity Rate Structure

Basic Electricity Rate: 50ZMW /month

Meter Rate: 0.3 ZMW /kWh

• Electricity Charge

Table 2-58 Electricity Charge

	Charge (ZMW)	Amount Used (kW/h)	Hours (h / day)	Days	Months	Total (ZMW)
Basic Rate	50	—	—	—	12	600
Meter Rate(daytime)	0.3	60	24	30	12	155,520
Total						156,120

② Phone Charge 10,008 ZMW /Year

The charge for fixed-line phones will depend on how many times the phones are used, so the charge is calculated as follows based on assumed use frequency in each facility.

• Rate Structure

Domestic Call Rate: 1.2 ZMW /min

International Call Rate: 86 ZMW /min

Table 2-59 Phone Charge

Pay-as-you-go	Charge (ZMW)	Calling Time (min / call)	Number of Calls (calls / day)	Days	Months	Total (ZMW)
Domestic	1.2	1	16	30	12	6,912
International	86	1	0.1	30	12	3,096
						10,008

③ Generator Fuel Charge 27,740 ZMW /Year

According to the hearing conducted on site, the actual frequency of power cut is twice a week and each power cut lasts for about two hours. Therefore, the fuel charge is calculated on the assumption that the generator operates for two hours per power cut event.

The generator capacity in the Project is around 100 kVA, and the load factor during use of the generator is assumed to be 60% of the rated capacity on average.

For the frequency of power cut, it is assumed that the situation at the time of the hearing on site will continue into the future.

• Rate Structure

Amount of Generator Fuel Consumption: 28ℓ/h

Fuel Unit Price: 8.6 ZMW /ℓ

• Fuel Charge

Table 2-60 Generator Fuel Charge

Season	Charge (ZMW)	Amount Used (L/h)	Hours (h)	Power Cut (events / month)	Months	Load Factor	Annual Amount Used (L)	Total (ZMW)
Whole Year	8.6	28	2	8	12	0.6	3,225.6	27,740
Total								27,740

④ Oxygen Gas Charge 8,553 ZMW / Year

Oxygen will be used in the surgery room, postnatal room, and other necessary rooms. The amount of oxygen used in the newly built facilities is estimated as follows:

Table 2-61 Amount of Oxygen Gas Power

Name of Facilities	Application	Amount Used per Month (cylinders / month)
Newly Built Facilities	Casualty, etc.	6
Total		6

- Rate Structure

O₂ Gas Charge: 198 ZMW /cylinder (1,600-L type)

- Oxygen Gas Charge

Table 2-62 Oxygen Gas Charge

	Charge (ZMW)	Amount Used (cylinders / month)	Months	Annual Amount Used (cylinders)	Load Factor	Total (ZMW)
O ₂ Gas Charge	198	6	12	72	0.6	8,553
Total						8,553

⑤ Building Running Cost 24,396 ZMW /Year

Materials were selected relatively easy to maintain for the buildings in the Project including external and internal finishing. Accordingly, it is assumed that the building running cost required for maintenance of the interior and exterior of the buildings, electricity, purchasing of repair / replacement parts for water supply / discharge, and air conditioning devices will be approximately 6 ZMW /m²/year, which is about a half to a third of similar examples currently in use in Japan. This cost will be needed from the second year or beyond.

Table 2-63 Building Running Cost

	Cost (ZMW/m ² /year)	Area (m ²)	Days	Months	Load Factor	Total (ZMW)
Building Running Cost	6	4,066	—	—	0.8	24,396
Total						24,396

⑥ Outsourcing Cost for Main Equipment Maintenance 30,000 ZMW /Year

In the Project, it is necessary to outsource the maintenance work for the main equipment, and the cost is estimated as follows. The calculation is based on discussions held with a local maintenance company.

Table 2-64 Estimated Outsourcing Cost for Main Equipment Maintenance

Equipment System	Maintenance Outsourcing Cost (ZMW)	Periodic Check Frequency
Air Conditioner	12,000	Once a Year
Medical Gas System	6,000	Once a Year
Generator / Receiving Transformer	12,000	Once a Year
Total	30,000	

⑦ Medical Equipment Maintenance Cost..... 332,246 ZMW /year

Medical equipment planning is established mainly with a view to procuring the necessary equipment to meet the demands for medical services and supplementing equipment which is shortage. The scope of the planning is kept to a manageable level so that the MOH can perform maintenance. Therefore, the MOH needs to consider how to secure a budget for the increase in medical equipment maintenance cost due to equipment procured for the newly built facilities. The expected cost increase through the Project will be about 332,246 ZMW.

Table 2-65 Medical Equipment Maintenance Cost

Kanyama Lv1H

Unit : USD

Code	Name of Medical Equipment	Q'ty	Content	Per Year Maintenance Costs	Total
(1) Operation Room Equipment					
	Vital signs monitor, portable	2	Disposable electrode, Nasal-oral adapter, Airway adapter, Disposable transducer, Recording paper	\$2,762.00	\$5,524.00
	Subtotal				\$5,524.00
(2) Dental Equipment					
	Dental film processor	1	Develop and fixer set, Dental X-ray film	\$222.00	\$222.00
	Dental light curing unit	1	Handpiece	\$32.00	\$32.00
	Subtotal				\$254.00
(3) Lab Equipment					
	Binocular microscope	1	Immersion oil	\$56.00	\$56.00
	Centrifuge, small	1	Conical tube	\$1,607.00	\$1,607.00
	Microhaematocrit centrifuge	1	Hematocrit capillary tube, Seal	\$281.00	\$281.00
	pH meter	1	Electrode inner solution, Standard solution	\$147.00	\$147.00
	Subtotal				\$2,091.00
(4) Other Equipment					
	Automatic film processor	1	Developer solution, X-ray film	\$15,475.00	\$15,475.00
	Ultrasonic diagnostic device	1	Recording paper, Ultrasound gel	\$1,232.00	\$1,232.00
	Ultrasonic diagnostic device (Mobile type)	1	Ultrasound gel	\$512.00	\$512.00
	Infant warmer	1	Probe pad	\$386.00	\$386.00
	Suction pump, electric	4	Bubble tube	\$121.00	\$484.00
	Water distiller	2	Salt for water softener	\$134.00	\$268.00
	Autoclave, electric, 400 liters	1	Recording paper, Ink ribbon, Salt for water softener	\$1,264.00	\$1,264.00
	Glucometer	5	Lancet and tip	\$367.00	\$1,835.00
	Subtotal				\$21,456.00
	(1)+(2)+(3)+(4)		Total (Conversion 332,246 ZMW)		\$29,325.00

*US\$1=11.3298 Kwacha, translated at the OANDA on 17th March 2016 (<http://www.oanda.com/lang/ja/currency/coverter/>)

Chawama Level 1 Hospital (Lv1H)

Table 2-66 Calculation Results of Maintenance Cost

Unit: ZMW

Expense Item	First Year	Second Year and Beyond
① Electricity Charge	125,016	125,016
② Phone Charge	11,736	11,736
③ Generator Fuel Charge	27,740	27,740
④ Oxygen Gas Charge	14,256	14,256
⑤ Building Running Cost	0	16,080
⑥ Outsourcing Cost for Main Equipment Maintenance	0	36,000
Subtotal ① - ⑥ (Facility Maintenance Cost)	178,748	230,828
⑦ Medical Equipment Maintenance Cost	338,432	338,432
total ①~⑦	517,180	569,260

① Electricity Charge 125,016 ZMW /Year

The amount of electricity used in the project facilities is estimated as follows based on the scale and properties of the facilities. The amount of electricity to be used due to the extensions is calculated on the assumption that about 60% of the installed capacity (200 kVA) will be the electricity load capacity (120 kVA) on average with a demand factor of 40%.

Considering the application of the facilities as a hospital, the operating time is assumed to be 24 hours / day, 30 days / month, and 12 months / year.

Table 2-67 Estimated Amount of Electricity Used

	Transformer Capacity (kVA)	Electricity Load Capacity (kVA)	Amount of Electricity Used per Hour (kW/h)
Newly Built Facilities	200	120	48

Demand Factor: 0.4

• Rate Structure

Basic Electricity Rate: 50 ZMW /month

Meter Rate: 0.3 ZMW /kWh

• Electricity Charge

Table 2-68 Electricity Charge

	Charge (ZMW)	Amount Used (kW/h)	Hours (h / day)	Days	Months	Total (ZMW)
Basic Rate	50	—	—	—	12	600
Meter Rate (daytime)	0.3	48	24	30	12	124,416
Total						125,016

② Phone Charge..... 11,736 ZMW /year

The phone charge will depend on how many times the phones are used, so the charge is calculated as follows based on assumed use frequency in each facility.

• Rate Structure

Domestic Call Rate: 1.2 ZMW /min

International Call Rate: 86 ZMW /min

Table 2-69 Phone Charge

	Charge (ZMW)	Calling Time (min / call)	Number of Calls (calls / day)	Days	Months	Total
Domestic	1.2	1	20	30	12	8,640
International	86	1	0.1	30	12	3,096
						11,736

③ Generator Fuel Charge 27,740 ZMW /year

According to the hearing conducted on site, the actual frequency of power cut through a whole year is twice a week and each power cut lasts for about two hours. Therefore, the fuel charge is calculated on the assumption that the generator operates for two hours per power cut event.

The generator capacity in the Project is around 100 kVA, and the load factor during use of the generator is assumed to be 60% of the rated capacity on average.

For the frequency of power cut, it is assumed that the situation at the time of the hearing on site will continue into the future.

• Rate Structure

Amount of Generator Fuel Consumption: 28ℓ/h

Fuel Unit Price: 8.6 ZMW /ℓ

• Fuel Charge

Table 2-70 Generator Fuel Charge

Season	Charge (ZMW)	Amount Used (L/h)	Hours (h)	Power Cut (events / month)	Months	Load Factor	Annual Amount Used (L)	Total (ZMW)
Whole Year	8.6	28	2	8	12	0.6	3,225.6	27,740
Total								27,740

④ Oxygen Gas Charge 14,256 ZMW /year

Oxygen will be used in the surgery room, postnatal room, and other necessary rooms. The amount of oxygen used in the newly built facilities is estimated as follows:

Table 2-71 Amount of Oxygen Gas Power

Name of Facilities	Application	Amount Used per Month (cylinders / month)
Newly Built Facilities	Casualty, etc.	10
Total		10

- Rate Structure

O₂ Gas Charge: 198 ZMW /cylinder

- Oxygen Gas Charge

Table 2-72 Oxygen Gas Charge

	Charge (ZMW)	Amount Used (cylinders / month)	Months	Annual Amount Used (cylinders)	Load Factor	Total (ZMW)
O ₂ Gas Charge	198	10	12	120	0.6	14,256
Total						14,256

⑤ Building Running Cost 16,080 ZMW /year

Materials were selected relatively easy to maintain for the buildings in the Project including external and internal finishing. Accordingly, it is assumed that the building running cost required for maintenance of the interior and exterior of the buildings, electricity, purchasing of repair / replacement parts for water supply / discharge, and air conditioning devices will be approximately 6 ZMW /m²/year, which is about a half to a third of similar examples currently in use in Japan. This cost will be needed from the second year or beyond.

Table 2-73 Building Running Cost

	Cost (ZMW /m ² /year)	Area (m ²)	Days	Months	Load Factor	Total (ZMW)
Building Running Cost	6	2,680	—	—	0.8	16,080
Total						16,080

⑥ Outsourcing Cost for Main Equipment Maintenance 36,000 ZMW /year

In the Project, it is necessary to outsource the maintenance work for the main equipment, and the cost is estimated as follows. The calculation is based on discussions held with a local maintenance company.

Table 2-74 Estimated Outsourcing Cost for Main Equipment Maintenance

Equipment System	Maintenance Outsourcing Cost (ZMW)	Periodic Check Frequency
Air Conditioner	12,000	Once a Year
Medical Gas System	6,000	Once a Year
Generator / Receiving Transformer	12,000	Once a Year
Treatment of Experiment Drainage Water	6,000	Once a Year
Total	36,000	

⑦ Medical Equipment Maintenance Cost 338,432 ZMW /year

Medical equipment planning is established mainly with a view to procuring the necessary equipment to meet the demands for medical services and supplementing equipment which is shortage. The scope of the planning is kept to a manageable level so that the MOH can perform maintenance. Therefore, the MOH needs to consider how to secure a budget for the increase in medical equipment maintenance cost due to medical equipment procured for the newly built facilities. The expected cost increase through the Project will be about 338,432 ZMW.

Table 2-75 Medical Equipment Maintenance Cost

Chawama Lv1H

Unit: USD

Code	Name of Medical Equipment	Q'ty	Content	Per Year Maintenance Costs	Total
(1) Operation Room Equipment					
	Vital signs monitor, portable	2	Disposable electrode, Nasal-oral adapter, Airway adapter, Disposable transducer, Recording paper	\$2,762.00	\$5,524.00
	Suction pump, electrical	2	Suction catheter, Tube for suction cup and curette	\$833.00	\$1,666.00
	Subtotal				\$7,190.00
(2) Dental Equipment					
	Dental film processor	1	Develop and fixer set, Dental X-ray film	\$222.00	\$222.00
	Dental light curing unit	1	Handpiece	\$32.00	\$32.00
	Subtotal				\$254.00
(3) Lab Equipment					
	Binocular microscope	1	Immersion oil	\$56.00	\$56.00
	Centrifuge, small	1	Conical tube	\$1,607.00	\$1,607.00
	Microhaematocrit centrifuge	1	Hematocrit capillary tube, Seal	\$281.00	\$281.00
	pH meter	1	Electrode inner solution, Standard solution	\$147.00	\$147.00
	Subtotal				\$2,091.00
(4) Other Equipment					
	Automatic film processor	1	Developer solution, X-ray film	\$15,475.00	\$15,475.00
	Ultrasonic diagnostic device	1	Recording paper, Ultrasound gel	\$1,232.00	\$1,232.00
	Ultrasonic diagnostic device (Mobile type)	1	Ultrasound gel	\$512.00	\$512.00
	Suction pump, electric	4	Bubble tube	\$121.00	\$484.00
	Water distiller	2	Salt for water softener	\$134.00	\$268.00
	Autoclave, electric, 400 liters	1	Recording paper, Ink ribbon, Salt for water softener	\$1,264.00	\$1,264.00
	Glucometer	3	Lancet and tip	\$367.00	\$1,101.00
	Subtotal				\$20,336.00
	(1)+(2)+(3)+(4)		Total (Conversion 338,432 ZMW)		\$29,871.00

*US\$1=11.3298 Kwacha, translated at the OANDA on 17th March 2016 (<http://www.oanda.com/lang/ja/currency/coverter/>)

(2) Financial Situation

1) National Budget, Budget of the MOH and Budget of the DHO

As shown in Table 2-76, the national budget that had been increasing but temporarily declined in 2015. It has increased significantly in 2016. In recent years, the proportion of the MOH budget to the national budget has remained between 8% and 9%. Currently, the MOH budget includes a year-to-year 160.9% increase due to the increase in the national budget. The operating costs of the project facilities are allocated by the DHO. As shown in Table 2-77, the balance for the DHO has remained in surplus, and thus there should be no problem financially for the operation of the project facilities in the three hospitals.

Table 2-76 National Approved Budget and Budget of the MOH

Unit: 1 million ZMW¹

Item	2013	2014	2015	2016
National Budget*	26,271.00	32,165.40	28,730.00	54,104.76
MOH Budget**	2,968.62	3,184.37	2,758.08	4,436.59
The proportion of the MOH Budget to the National Budget ***	11.3	9.9	9.6	8.2
Rate of increase in the MOH Budget (%)	—	7.3	-13.3	60.9

Source : * The proposed 2016-2018 Medium Term Expenditure Framework and the 2016 budget Green Paper, Ministry of Finance. For 2015 and 2016, it was calculated on the basis of the MOH budget from the percentage of MOH budget to the National budget.

** 2016 Activity Based Budget Highlights, MOH. For 2013 and 2014, It was calculated on the basis of the national budget from the proportion of the MOH budget for the national budget.

*** Planning and Budgeting Technical Planning updates for MTEF 2016-2019 (DPP, MOH), The proposed 2016-2018 Medium Term Expenditure Framework and the 2016 budget Green Paper (Ministry of Finance). Approved value for 2012 to 2015 and plan value for 2016.

Table 2-77 Budget of the DHO

Unit: ZMW

Item	2012	2013	2014
Total revenue	18,387,000	7,931,523	12,690,742
Budget from MOH	10,750,000	6,948,742	9,541,592
Other Income	7,537,000	982,781	3,149,150
Total Expenditure	16,843,430	6,948,742	9,223,401
DHO	2,218,000	1,043,210	1,123,383
Facility Usage Fees for UTH and Levy Mwanawasa General Hospital (Referrals)	2,299,000	1,794,321	1,534,143
Health Centre	9,609,400	3,140,239	5,002,330
Community	2,717,030	976,963	1,563,545
Balance	1,543,569	982,781	3,467,341

Source : Lusaka DHO Action Plan 2016-2018

¹ US\$1=11.3298 ZMW, translated at the OANDA on 17th March 2016 (<http://www.oanda.com/lang/ja/currency/converter/>)

(3) Maintenance Costs

The budget for the three project facilities is shown in Table 2-78. The operating budgets for the level 1 hospital services of each facility have been steadily increasing. In addition, the approved 2016 budgets for Kanyama and Chawama Lv1Hs have significantly increased by 50% year to year. This is because the facility usage fees that have been paid to UTH and Levy Mwanawasa General Hospital were not required in 2016. Therefore, those amounts have been additionally allocated to the five level 1 hospitals.

In addition, the medium-term expenditure framework for level 1 hospital is shown in Table 2-79. The budget allocation to the three target facilities are planned to increase by 10% each year in addition to the usage fees that will be allocated to the five level 1 hospitals. In the medium term, the expenditure framework indicates that the budget allocations to the level 1 hospitals will likely increase, and it is assumed that the budgets for the three target facilities will be increased after September 2019 when construction is complete.

Table 2-78 Budget for the Three Project Facilities

Unit: ZMW

Facility	Catchment Area Population	2013		2014		2015		2016
		Approved Budget	Expenditure	Approved Budget	Expenditure	Approved Budget	Expenditure	Approved Budget
Chipata	625,957	548,703	187,691	609,670	239,138	670,638	276,408	726,986
Kanyama	303,772	266,395	169,977	295,995	140,255	325,595	285,113	488,926
Chawama	291,145	253,509	128,514	281,677	174,372	309,845	240,079	464,498

Source: Questionnaire from Lusaka DHO

Table 2-79 1 Mid-Term Budget Plan for Level 1 Hospital

Unit: ZMW

Facility	Catchment Population	2016	2017	2018
UTH	80% ²	590,067	649,074	713,981
Levy Mwanawasa General Hospital	20%	357,148	392,863	432,149
Chipata Lv1H	625,957	555,681	611,249	672,374
Matero Lv1H	401,510	366,393	403,032	443,335
Chawama Lv1H	291,145	266,819	293,501	322,850
Kanyama Lv1H	303,772	291,248	320,373	352,410
Chilenje Lv1H	581,154	515,850	567,435	624,178
Total	2,203,538	2,943,206	3,237,527	3,561,280

Source: Lusaka DHO Action Plan (2016-2018)

² It is assumed that 80% patients of the total population of Lusaka District patients referred from lower health facilities will be accepted at UTH and 20% will be accepted at Levy Mwanawasa General Hospital. Then, the facility usage fee for referrals was allocated to these two facilities in the Lusaka DHO Action Plan (2016-2018). However, this facility usage fee is no longer required from the approved budget for 2016 and is additionally allocated to five level 1 hospitals.

As described above, the facility usage fee for UTH and Levy Mwanawasa General Hospital was additionally allocated to the level 1 hospitals, namely 171,305 ZMW for Chipata Lv1H, 197,678 ZMW for Kanyama Lv1H, and 197,679 ZMW for Chawama Lv1H. The budget allocation to the three project facilities are planned to increase by 10% each year, and thus it is assumed that the maintenance budget will be secured for Chipata and Chawama Lv1Hs in 2019 at the scheduled completion of construction time. In terms of Kanyama Lv1H, the shortfall amount is approximately 70,000 ZMW, and we consider that the budget will be highly likely to be secured by budget allocation within the DHO. In conclusion, it is considered that the operation maintenance plan is appropriate

Chapter 3. Project Evaluation

CHAPTER 3. PROJECT EVALUATION

3-1 Preconditions

To implement the overall process of the Project smoothly and effectively, it is crucial that the obligations, which are described in section 2-3, should be carried out at an appropriate time before the start of construction and during construction.

3-2 Necessary Inputs by Recipient Country

(1) Issues to Be Handled by Zambia and Suggestions

To make sure that the three project facilities will be functioned as level 1 hospitals through the Project, the following points need to be ensured, further improved, or established.

1) Ensure That the Staffing and Operation and Maintenance Budget Is based on the Standard Deployment Reference for the Level 1 Hospitals

There is a shortage of staff in the three project facilities in comparison with new standard establishment for urban level 1 hospitals. Therefore, there is a need for increasing the number of staff in line with the standard. For staffing, the MOH has agreed to place the necessary human resources (medical, administrative and support staff) in line with the standard for urban level 1 hospitals, and it should be carried out. In addition, Zambia needs to budget and allocate sufficient funds for the maintenance of the three project facilities.

2) Implement Appropriate Maintenance Measures and Medical Equipment for the Three Project Facilities

Technical guidance for software component are planned so that the staff at the three project facilities can manage and maintain the new facilities and equipment and improve management and maintenance skills for medical waste and drainage systems. It is crucial that the medical staff and maintenance personnel conduct preventive maintenance management on a daily basis or regularly in accordance with the technical guidance mentioned above.

(2) Technical Cooperation and Collaboration with Other Donors

The Health Capital Investment Support Project (January 2010 to March 2016) covering Lusaka Province, Eastern Province, and Western Province supported, the development of national guidelines for equipment maintenance for level 1- to level 3 hospitals, training for improving the maintenance and management capability (e.g. procurement of spare parts and consumables and the disposal of unnecessary equipment) and budget planning for maintenance management based

on evidence. In addition, the project for Strengthening Basic Health Care Services Management for Universal Health Coverage in Zambia (October 2015 to October 2019) covering Lusaka Province and Southern Province supports policy making based on appropriate data collection and analysis and strengthens and the supervisory functions at the MOH, PHO and DHO. The project for Strengthening the Capacity of Facility-Census-Based Health Investment Planning in Zambia (December 2016 to December 2018) supported the capacity development of health resource management based on the National Health Facility Census data for evidence-based investment planning.

These projects enhance the ability of the MOH (Department of Policy and Planning, Department of Clinical Care and Diagnostic Services, PHO and DHO) to maintain the new facilities and to provide effective and efficient resource allocation (budget, human resource, and medical supplies) for basic health services, and thus, it is expected that the three project facilities will be properly managed.

In addition, the EU is supporting or planning the construction/rehabilitation of facilities and the provision of medical equipment for maternal and child health-related services in the Kanyama Level 1 Hospital (hereinafter referred to as “Kanyama Lv1H”), Chawama Level 1 Hospital (hereinafter referred to as “Chawama Lv1H”) and Chipata Level 1 Hospital (hereinafter referred to as “Chipata Lv1H”). This support is through UNICEF, with the Millennium Development Goal Initiative (MDGi) scheme as the implementing body. Also, UNICEF supports some non-medical equipment, such incinerators and generators, and conducts training for medical staff on emergency obstetric care in this scheme. With this additional support, it is expected that the three project facilities can be comprehensively enhanced as level 1 hospitals.

3-3 Important Assumptions

To develop the effectiveness of the Project and its sustainability, the following matters are considered.

- (1) The current vision for the health sector in the Next National Development Plan and the current mission in the National Strategic Health Plan will be passed on to the next plans

In the Project, the contents are formulated under the vision for the health sector in the Revised Sixth National Development Plan 2013–2016, namely, "equitable access to quality health care for all by 2030", and in the mission of the National Health Strategic Plan 2011–2015, namely, “to provide equitable access to cost effective, quality health services as close to the family as possible”. The current vision and mission need to be passed on to the next plan.

(2) Political and Economic Status of Zambia Will Not Be Significantly Deteriorated

Zambia has maintained political stability since its independence in 1964. In recent years, the annual rate of GDP has maintained growth of more than 6%, and the country has experienced rapid economic growth. However, the economic growth rate is expected to decline to less than 4% in 2015 for the first time since 1998 due to the decline in the international price of copper, a serious power crisis, and the impact of the Zambian Kwacha decline. The economic growth rate is expected to recover to 5%–6% growth by 2018 when the price of copper is expected to stabilise.

It is important that the political and economic situation continues to be stable in the future.

3-4 Project Evaluation

3-4-1 Relevance

Grant aid from Japan for implementing the Project to support the following matters is anticipated.

(1) Purpose and Beneficiaries of the Project

There is a significant shortage of level 1 hospitals, and in addition, the level 1 hospitals that have been upgraded from health centres are still unable to provide basic surgeries, including Caesarean sections and X-ray inspections, which are essential services for a level 1 hospital. Therefore, patients who just require basic health services have to go to UTH, which provides advanced healthcare services. Because of this, UTH faces chronic and severe congestion.

The Project is conducive to the improvement of access to health services and their provision for people in the Lusaka District; moreover, this can contribute to relieving the congestion.

Chipata Lv1H is located in zone 1 with a beneficiary population of 625,957 people. Kanyama Lv1H is located in zone 3 with a beneficiary population of 303,772 people. Chawama Lv1H is located in zone 4 with a beneficiary population of 291,145 people. The total beneficially population is equivalent to approximately half the total population of the Lusaka District.

(2) Integrity of the National Development Plan and the Health Policy of Zambia

In Zambia's Revised Sixth National Development Plan 2013–2016 (R-SNDP), the health sector is positioned as significant: "equitable access to quality health care for all by 2030" has been set as the vision in the plan. In addition, the mission "to provide equitable access to cost effective, quality health services as close to the family as possible" has been set, and the rehabilitation of health centres, infrastructure and medical equipment are prioritised in the National Health Strategic Plan 2011–2015.

Consistency with the upper level plans is high, and thus the validity of the implementation of this plan is recognised.

(3) Consistency with the Assistance Policy of the Government of Japan

In the Rolling Plan 2016 of Japan's Country Assistance Policy for the Republic of Zambia "Improvement of Social Infrastructure for Sustainable Economic Growth" is set as a priority area, and "Improving basic environment for Human Resource Development for the future" is set as its development issue. In terms of the health sector, "improving maternal newborn and child health through strengthening primary health care with sustainable physical health infrastructure development and medical facilities maintenance service" is set as one of assistance program. The Project has consistency with Japan's assistance policy.

3-4-2 Effectiveness

The outputs and the expected effects through the implementation of the Project are as follows. With regard to performance indicators to measure the achievement, the base year is 2016, when the survey was conducted. The goal is to complete all aspects by 2022, three years after the facilities will be completed in 2019. The following indicators to measure quantitative effect and the qualitative effect are proposed.

(1) Quantitative Effect

Table 3-1 Effects of the Project

Indicator	Facility	Unit	Standard Value		Objective Value (2022) (three years after completion of construction)
			Year of Standard Value	Value	
Number of Outpatients*1	Chipata	person/year	Average between 2013-2015	191,156	239,136
	Kanyama	person/year	Average between 2014-2015	232,553	290,924
	Chawama	person/year	Average between 2013-2015	190,506	238,323
Number of Caesarean section*2	Chipata	case/year	2015	161	580
	Kanyama	case/year	2015	0	746
	Chawama	case/year	2015	0	518
Number of surgeries (excluding caesarean section)*3	Chipata	case/year	2015	655	903
	Kanyama	case/year	2015	0	1,147
	Chawama	case/year	2015	0	795

*1: At the time of the 2016 survey will be the reference year, and the population growth rate 3.8% for the Lusaka District will be applied (Central Statistics Office, 2013). In comparison, the number of outpatients in 2022 is expected to increase by 25.1%.

*2: It is assumed that 10% of total delivery number will be Caesarean section, and its 90% s can be covered at the level 1 hospitals.

It is assumed that the average of the total delivery number at each facility from 2011 to 2015 will increase by 25.1% by 2022. The target value will be set at 80% because the availability of service will depend on the placement of personnel in 2022.

*3: The average number of basic surgeries that will be performed in the Lv1H from 2011 to 2015 is expected to increase by 25.1% by 2022, and 50% of patients will be covered by the project facilities under this plan. The number of patients at each facility will depend on the regional referral patient numbers and the zone ratio for the Lv1H.

The indicators are set as the number of outpatients, number of Caesarean sections and numbers of surgeries other than Caesarean section to measure the achievements after the three project facilities begin functioning as level 1 hospitals and after the development of an outpatient wing of the facility, an operation theatre, and relevant facilities and equipment. These multiple indicators will determine the degree of achievement of the Project's goal.

(2) Qualitative Effect

The outputs and expected qualitative effects through the implementation of the Project are as follows.

① Improvement in the Quality of Health Services

As a level 1 hospital, the quality of health services will be improved by reliably providing essential health services, such as surgery and X-ray inspections.

② The Provision of the Functional and Efficient Health Services

It will be possible to provide functional and efficient medical services by improving and concentrating OPD and central examination department, which can be conducive to the improvement of the flow line of staff and patients.

③ Indicators of the Work Environment and Satisfaction Survey from Patients

It is expected that the satisfaction of both health services providers and patients will be improved by enhancing the workplace and environment for providing health care services.

④ Reinforcement of the Referral System in the Lusaka District

It is expected that the referral system in the Lusaka District will be strengthened and that health services will be provided closer to the people by establishing the level 1 hospital function for the three project facilities. The alleviation of congestion and functional recovery as a top referral hospital are also expected.

Thus, the validity of the Project is high, and it is also determined that the efficacy is recognised.

Appendices

1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in the Recipient Countries
4. Minutes of Discussion
5. Soft Component (Technical Assistance) Plan
6. Other Relevant Data

1. Member List of the Study Team

Preparatory Survey (February 15 to March 13, 2016)

No.	Name	Assignment title	Organization
1	Mr. Hiroshi TAKENAKA	Leader	Japan International Cooperation Agency
2	Ms. Asako HAYASHI	Project Coordinator	Japan International Cooperation Agency
3	Ms. Kuniko YOSHIZAWA	Project Manager, Architectural Planner	Nihon Sekkei, Inc.
4	Ms. Makiko UEMURA	Vice Project Manager, Architectural Designer/ Natural Condition Researcher	Nihon Sekkei, Inc.
5	Mr. Yoshiro SUYAMA	Facilities Planner	Nihon Sekkei, Inc.
6	Mr. Yasuharu UCHIYAMA	Construction Planner/ Cost Planner	Nihon Sekkei, Inc.
7	Mr. Takashi OGAWA	Equipment Planner 1	Fujita Planning, Co., Ltd.
8	Mr. Yasuhiro SATO	Equipment Planner 2 / Procurement / Cost Planner	Fujita Planning, Co., Ltd.
9	Ms. Kaori NISHIKIDO	Health Care /Health System Researcher	Fujita Planning, Co., Ltd.
10	Mr. Masaki FUJIISHI	Architectural Designer (Assistant)	Nihon Sekkei, Inc.
11	Mr. Kazuo Takeishi	Facilities Planner (Assistant)	Nihon Sekkei, Inc.

Additional Preparatory Survey (June 4 to 11, 2016)

No.	Name	Assignment title	Organization
1	Mr. Hiroshi TAKENAKA	Leader	Japan International Cooperation Agency
2	Ms. Kuniko YOSHIZAWA	Project Manager, Architectural Planner	Nihon Sekkei, Inc.
3	Mr. Yasuhiro SATO	Equipment Planner 2 / Procurement / Cost Planner	Fujita Planning, Co., Ltd.

Explanation on Draft Preparatory Survey Report (November 30 to December 9, 2016)

No.	Name	Assignment title	Organization
1	Mr. Hiroshi TAKENAKA	Leader	Japan International Cooperation Agency
2	Ms. Yuki KIMURA	Project Coordinator	Japan International Cooperation Agency
3	Ms. Kuniko YOSHIZAWA	Project Manager, Architectural Planner (Assistant)	Nihon Sekkei, Inc.
4	Ms. Makiko UEMURA	Vice Project Manager, Architectural Designer/ Natural Condition Researcher	Nihon Sekkei, Inc.
5	Mr. Takashi OGAWA	Equipment Planner 1	Fujita Planning, Co., Ltd.

2. Study Schedule

Preparatory Survey (February 15 to March 13, 2016)

			JICA MEMBERS			CONSULTANT MEMBERS											
			MISSION LEADER	PROJECT COORDINATOR	PROJECT MANAGER & ARCHITECTURAL PLANNER	VICE PROJECT MANAGER/ ARCHITECTURAL DESIGNER /NATURAL CONDITION RESEARCHER	ARCHITECTURAL DESIGNER -Assistant	HEALTH CARE/ HEALTH SYSTEM RESEARCHER	EQUIPMENT PLANNER	FACILITIES PLANNER	CONSTRUCTION PLANNER/ COST PLANNER	EQUIPMENT PLANNER/ PROCUREMENT/ COST PLANNER	FACILITIES PLANNER - Assistant				
			Hiroshi Takenaka	Asako Hayashi	Kuniko Yoshizawa	Makiko Uemura	Masaki Fujiishi	Kaori Nishikido	Takashi Ogawa	Yoshiro Suyama	Yasuharu Uchiyama	Yasuhiro Sato	Kazuo Takeishi				
1	15-Feb.	M	Health Capital Investment Support Project (HCISP)			dep. Japan			dep. Japan		dep. Japan						
2	16-Feb.	T				arr. Lusaka, meeting at JICA Office					arr. Lusaka						
3	17-Feb.	W				Courtesy call to MOH: Explain Inception Report, Discuss about Request					MOH						
4	18-Feb.	R				Survey of Chipata, Kanyama Level 1 Hospital (Lv1H)					Lv1H survey						
5	19-Feb.	F				Survey of Chawama Lv1H, meeting with DMO					Lv1H survey						
6	20-Feb.	Sa				dep. Japan		Hospital Site Environment Survey			Documents processing		dep. Japan		Site Survey		
7	21-Feb.	Su				arr. Lusaka		Internal meeting, document processing			arr. Lusaka		Internal meeting				
8	22-Feb.	M	Meeting at JICA Office, courtesy call to Japanese Embassy Courtesy call to MOH														
9	23-Feb.	T	Visit Chipata, Kanyama Lv1H			Meteorological Survey		PHO, related		Visit Lv1H		Visit Chipata, Kanyama Lv1H					
10	24-Feb.	W	Visit Chawama Lv1H, meeting with MDGi			Lv1H survey		Visit related offices/donors		Visit Lv1H		Visit Chawama Lv1H, Market Survey					
11	25-Feb.	R	Visit UTH, Levy M. Hospital		HCISP		Visit UTH and Levy M. Hospital										
12	26-Feb.	F	Visit another reference facility (Candidate: Chongwe Lv1H)														
13	27-Feb.	Sa	Visit Matero, Chilenje Lv1H		HCISP		Visit Matero & Chilenje Lv1H (under construction)										
14	28-Feb.	Su	Internal meeting		Internal meeting, document processing						dep. Japan						
15	29-Feb.	M	MOH, DHO, Lv1H, meeting			Lv1H survey		MOH, DHO, Lv1H, meeting		Agency Survey		arr. Lusaka dep. Japan					
16	1-Mar.	T	MOH, DHO, HC, further meeting			Soil and topography survey quotation		DHO, related survey		Agency Survey			arr. Lusaka				
17	2-Mar.	W	Discussion of Minutes with MOH						DHO, related survey		Lv1H Survey						
18	3-Mar.	R	Discussion of Minutes with MOH Signing Minutes						DHO, related survey Soil/topo survey estimation pick		Visit Officials (Fire fight, Water Supply, etc.), Construction & Agency Survey						
19	4-Mar.	F	Report to JICA Office · Japanese Embassy (JICA Members: dep. Lusaka)			Discussion of Technical Memorandum with MOH		DHO, related survey		Visit Related Officials (Power, Communication), Agency Survey							
20	5-Mar.	Sa	arr. Japan		HCISP		Further Survey			Further Survey · Preparing Technical Memorandum							
21	6-Mar.	Su					Internal meeting, document processing			Internal meeting, document processing							
22	7-Mar.	M			Discussion of TM with MOH		Soil & topography survey contract		Discussion of TM with MOH		MOH: Technical Memo meeting		Market & Agency Survey Visit Related Officials (Power, Communication), Agency Survey				
23	8-Mar.	T	Preparing Technical Memorandum						Further survey / Preparing Technical Memorandum								
24	9-Mar.	W	Signing Technical Memorandum, Report to JICA Office						Signing Technical Memorandum, Report to		Market & Agency Survey						
25	10-Mar.	R					dep. Lusaka			Market & Agency Survey dep. Lusaka							
26	11-Mar.	F			HCISP		Unrelated matter		arr. Japan			Market & Agency Survey arr. Japan					
27	12-Mar.	Sa			dep. Lusaka		dep. Lusaka		arr. Japan								
28	13-Mar.	Su			arr. Japan		arr. Japan										

Additional Preparatory Survey (June 4 to 11, 2016)

			JICA MEMBERS	CONSULTANT MEMBERS			
			MISSION LEADER	PROJECT MANAGER & ARCHITECTURAL PLANNER	EQUIPMENT PLANNER/ PROCUREMENT/COST PLANNER		
			Hiroshi Takenaka	Kuniko Yoshizawa	Yasuhiro Sato		
1	4-Jun.	Sat	dep. Japan				
2	5-Jun.	Sun	dep. Japan- arr. Lusaka			arr. Lusaka	
3	6-Jun.	Mon	Meeting at JICA Office, Courtesy call to Japanese Embassy, Meeting with MOH				
			Meeting with MOH, Talk with Provincial Medical Officer		Meeting with Medical Equipment Agents		
4	7-Jun.	Tue	Meeting at MOH, DHO				
			Meeting with Medical Equipment Agents				
5	8-Jun.	Wed	Visit Matero Lv1H, Team Meeting at JICA Office				
			Meeting with Medical Equipment Agents	Meeting with MOH		Meeting with Medical Equipment Agents	
6	9-Jun.	Thu	Visit Chilenje Lv1H, Discussion with Vice Minister, DMO, MOH rep., Hospital rep., Community reps. at Chawama Lv1H				
			Meeting with Medical Equipment Agents	Meeting with MOH		Meeting with Medical Equipment Agents	
7	10-Jun.	Fri	Report to JICA Office and Embassy of Japan, Signing preparation at MOH				
			Visit to Kanyama Lv1H for waste water information				
			Meeting with Medical Equipment Agents	Contact wt MOH for further Signing		Meeting with Medical Equipment Agents	
			dep. Lusaka				
8	11-Jun.	Sat	arr. Japan				

Explanation on Draft Preparatory Survey Report (November 30 to December 9, 2016)

			JICA MEMBERS		CONSULTANT MEMBERS		
			MISSION LEADER	PROJECT COORDINATOR	PROJECT MANAGER & ARCHITECTURAL PLANNER	VICE PROJECT MANAGER /ARCHITECTURAL DESIGNER /NATURAL CONDITION RESEARCHER	EQUIPMENT PLANNER
			Hiroshi Takenaka	Yuki Kimura	Kuniko Yoshizawa	Makiko Uemura	Takashi Ogawa
1	30-Nov.	Wed	dep. Japan- arr. Lusaka				
2	1-Dec.	Thu	Meeting at JICA Office, Explanation of Draft Final Report at MOH				
3	2-Dec.	Fri	Chawama Lv1H Survey, Matero/Chilenje Lv1H Survey				
4	3-Dec.	Sat	Matero Lv1H Survey / Information Revise				
5	4-Dec.	Sun	Internal Meeting				
6	5-Dec.	Mon	Explanation of Draft Final Report (Facilities)				
7	6-Dec.	Tue	Discussion of Minutes with MOH				
8	7-Dec.	Wed	Explanation of Draft Final Report (Medical Equipment)				
9	8-Dec.	Thu	Report to Japanese Embassy, Signing of the Minutes, Report to JICA				
			dep. Lusaka				
10	9-Dec.	Fri	arr. Japan				

3. List of Parties Concerned in the Recipient Countries

【Ministry of Health】

Name	Department	Title
Dr. Jabbin L. Mulwanda	(Health Services, MOH)	Permanent Secretary (2016.12)
John Moyo	(Administration, MOH)	Permanent Secretary (2016.12)
Dr. Peter Mwaba		Permanent Secretary (2016.03)
Makasa O. Chimfwembe	Policy and Planning	Director
Benjamin Nsenje	Human Resource & Administration	Director (2016.12)
John Moyo	Human Resource & Administration	Director (2016.03)
Dr Lisulo Walubita	Clinical Care and Diagnostic services	Deputy Director
Mbewe Chikuta	Clinical Care and Diagnostic services	Deputy Director (Pharmacy)
Kakulubelwa Mulalelo	Policy and Planning	Chief Planner Infrastructure
Patson S. Mwanza	Policy and Planning	Principle Planner Infrastructure
Rapheal L. Mwanza	Policy and Planning	Principle Planner Infrastructure
Jason Wamulume	Policy and Planning	Principle Planner Infrastructure
Terence Siansalama	Policy and Planning	Principle Planner
Gilbert Musonda	Clinical Care and Diagnostic services	Chief Medical Equipment Officer
Fredrick Mwila	Human Resource & Administration	Assistant Director

【Office of the Vice President】

Name	Title
Hon. Lawrence John Sicalwe, MP	Deputy Minister

【Provincial Medical Office】

Name	Title
Dr. Simpungwe Kakungu	Provincial Medical Officer (December, 2016)
Dr. Kennedy Malama	Provincial Medical Officer (March, 2016)
Dalitso Sakala	Infrastructure Officer (December, 2016)
Chitambeya Mukwangole	Infrastructure Officer (December, 2016)
Sungani Phiri	Infrastructure Officer (March, 2016)
Chris Sinkala	Principal Medical Equipment Officer
Bupe Mutanya	Senior Human Resource Management Officer
Dr. Goshen Ksanda	Maternal Services Coordinator
Dr. Ken Mukomena	Assistant Clinical Care Specialist
Chola Chileshe	Acting Chief Environmental Health Officer
Tumba Hachongo	Planner

【District Health Office】

Name	Title
Dr.Gideon Zulu	District Medical Officer
Dr. Clara Mbwili-Mleya	Principle Clinical Care Officer
Dr. Matimba Chiko	Assistant Principle Clinical Care Officer
Hakooola Guji	Senior Planner
Aaron Njobvu	Senior Environmental Health Technologist
Mashandi Fridah	Senior Human Resource Management Officer
Mercy Kwendama	District Health Information Officer

【Chipata Level 1 Hospital】

Name	Title
Dr.Evans Chikoyo	Medical Officer in charge
Maureen C. Mwnbazi	Nursing Officer
Maureen Chikwa	Nursing Sister
Martha N. Chabala	Registered Midwife
Batuli Phiri	Registered Nurse
Faides Mambwe	Environmental Health Technologist
Victoria Banda	Environmental Health Technologist

【Kanyama Level 1 Hospital】

Name	Title
Mubiana.S.Kachindo	Sister in charge
Justina Chama	Registered Midwife
Edina K. Kayula	Registered Nurse
Kapapi George	Environmental Health Technologist
Collins Kabwe	Dental
Edina K. Kayula	Nurse
Mubiana S. Kachindo	Midwife

【Chawama Level 1 Hospital】

Name	Title
Lengwe Christopher	Medical Officer in Charge
Lillian Chomba	Sister in Charge
Mercy S. Kaoma	Registered Midwife
Justina Kasonde	ART in Charge
Justina K. Nyirenda	Registered Nurse
Jesper Sakala	Laboratory Technologist
Julie Mosonda	Environmental Health Technologist
Peter Kayombo	Community
Musonda Mwape	Community

【University Teaching Hospital】

Name	Title
Dr. Ben U. Chirwa	Senior Medical Superintendent
Brian M. Muyunda	Senior Health Information Officer

【Levy Mwanawasa General Hospital】

Name	Title
Dr. Clarence Chiluba	Medical Superintendent, Head Clinical Care & Consultant Physician
Mwenya Harrington	Hospital Engineer
Joseph Mphande	Medical Equipment Technician
Virginia Mwakacheya	Health Information Officer
Ruth H. Mwamba	Principle Hospital Administrator

【Chongwe District Hospital】

Name	Title
Albert Chilambwe	Human Resource
Gabriel Matandiko	Data Associate

【Ministry of Works and Supply】

Name	Title
Moses Khosa	Engineer
Mweene Musanu	Senior Architect

【Lusaka City Council】

Name	Title
Lawrence Tubi	Chief Fire officer
Robert Banda	Deputy Chief

【National Assembly Chawama Constituency】

Name	Title
Vainess Banda	Professional Assistant

【Ng'ombe Health Centre】

Name	Title
Dorothy Banda	Health Centre in Charge
Dishon Muhone	Data Clerk

【UNICEF】

Name	Title
Dr. Jonas Mwale	MDGi manager
Celia Tusime Kakande	International Programme Manager - MDGi

【Centers for Disease Control and Prevention】

Name	Title
Dr. James McAuley	Director
Edward W. Schroder	Microbiologist - Laboratory Advisor

【AIDS Healthcare FoundationCenters for Disease Control and Prevention】

Name	Title
Hambweka Munkombwe	Operations Manager

【ZESCO】

Name	Title
Jimmie Njovu	Principal Engineer

【Zamtel】

Name	Title
Panji Musisha	Assistant Engineer
Christopher Chitimbwa	Technitian

【Lusaka Water and Sewage Co. Ltd】

Name	Title
Yvonne Mwandu Siyeni	Manager Peri Urban
Wycliff Kunda	Manager

【Embassy of Japan in Zambia】

Name	Title
Hidenobu Sobashima	Ambassador Extraordinary and Plenipotentiary (2016. 12)
Kiyoshi Koinuma	Ambassador Extraordinary and Plenipotentiary (2016. 03)
Masahiro Yamao	First Secretary

【JICA Zambia Office】

Name	Title
Hisanao Noda	Chief Representative
Hitoshi Fujiie	Deputy Resident Representative
Yukari Yasutaka	Project Formulation Advisor (Health)

4. Minutes of Discussion

MINUTES OF DISCUSSIONS ON PREPARATORY SURVEY ON THE PROJECT FOR UPGRADING OF LUSAKA HEALTH CENTERS TO DISTRICT HOSPITALS PHASE 2

In response to a request from the Government of the Republic of Zambia (hereinafter referred to as "Zambia"), the Government of Japan decided to conduct a Preparatory Survey on the Project for Upgrading of Lusaka Health Centers to District Hospitals Phase 2 (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

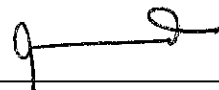
JICA sent the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") to Zambia, headed by Dr. Hiroshi Takenaka, Senior Advisor in Health, Human Development Department JICA, and is scheduled to stay in the country from 16th February to 11th March, 2016.

The Team held a series of discussions with the officials concerned from the Government of Zambia and conducted a field survey in the Project area. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to conduct further works and prepare the Preparatory Survey Report.

Lusaka, 3rd March, 2016



Dr. Hiroshi Takenaka
Leader
Preparatory Survey Team
Japan International Cooperation Agency



Mr. Davis Makasa Chimfwembe
Acting Permanent Secretary
Ministry of Health
The Republic of Zambia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to decongest higher level hospitals in Lusaka district to enable them focus on tertiary / 3rd level /national services through upgrading of three (3) Urban Health Centers in Lusaka District to first level district hospitals, thereby contributing to improvement on health service delivery in Lusaka district.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Upgrading Lusaka Health Centres to District Hospitals Phase 2".

3. Project Sites

Both sides confirmed that the sites of the Project are in Lusaka District, Kanyama, Chipata and Chawama Health Centres, which is shown in Annex-1.

4. Executing Agency

The executing agency is Ministry of Health. The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the Undertakings are taken by relevant agencies properly and on time. The organization charts are shown in Annex-2-2.

5. Items requested by the Government of Zambia

5-1. As a result of discussions, both sides confirmed that the items requested by the Government of Zambia are as shown in Annex-4 (facilities) and Annex-5 (equipment).

5-2. JICA will assess the appropriateness of the above requested items through the survey with following criteria and will report findings to the Government of Japan. The final components of the Project would be decided by the Government of Japan.

- Economic and Financial Viability
- Technical Feasibility
- Manageable and Administrative Competence of Organization Concerned
- Financial Allocation by Japanese side
- No duplication of similar support by Development Partners

6. Japan's Grant Aid Scheme

6-1. The Zambian side understands the Japanese Grant Scheme and its procedures as described in Annex-6, Annex-7 and Annex-8 and necessary measures to be taken by the Government of Zambia.

6-2. The Zambian side understands to take the necessary measures, as described in Annex-9, for smooth implementation of the Project, as a condition for the Japanese Grant to be implemented. The detailed contents of the Annex-9 will be worked out during the survey and shall be agreed no later than by the Explanation of the Draft Preparatory Survey Report.

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The contents of Annex-9 will be used to determine the following:

- A) The scope of the Project.
- B) The timing of the Project implementation.
- C) Timing and possibility of budget allocation.

Contents of Annex-9 will be updated as the Preparatory Survey progresses, and will finally be the Attachment to the Grant Agreement.

7. Schedule of the Study

- 7-1. The consultants will proceed to further studies in Zambia until 11th March, 2016.
- 7-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Zambia in order to explain its contents around September, 2016.
- 7-3. If the contents of the draft Preparatory Survey Report is accepted in principle and the Undertakings are fully agreed by the Zambian side, JICA will complete the final report in English and send it to Zambia around November, 2016.
- 7-4. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

- 8-1. The Zambian side confirmed to give due environmental and social considerations during implementation of the Project, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).
- 8-2. The Project is categorized as C because the Project is not located in a sensitive area, nor has it sensitive characteristics, nor falls it into sensitive sectors under the Guidelines, and its potential adverse impacts on the environment are not likely to be significant.
- 8-3. For projects that will result in involuntary resettlement, the Zambian side confirmed to prepare a Resettlement Action Plan (RAP)/Abbreviated Resettlement Action Plan (ARAP) and make it available to the public. In addition, the Zambian side confirmed to provide the affected people with sufficient compensation and/or support in accordance with RAP/ARAP, in a timely manner.

9. Other Relevant Issues

9-1. Location for the construction of the facilities

Both sides agreed on the location for the construction of the facilities as per Annex-1.

9-2. Staff allocation

The Zambian side agreed to ensure sufficient staff and budget for the operation and maintenance of the facilities and medical equipment provided. The staff recruitment should be basically carried out according to the standard establishment as per Annex-2-1 and the timeline of staff recruitment procedure as per Annex-2-3.



9-3. Demarcation with MDGi

Both sides confirmed that the facilities and equipment to be covered by the Project will be no duplication of with those to be covered by MDGi which are listed in Annex-3.

9-4. Approval procedure

Both sides confirmed major undertakings by both Zambian side and Japanese side as per Annex-9. Out of the listed undertakings of both sides, it should be noted that the Zambian side agreed to prepare the following approval documents by the deadlines described below.

- 1) (Chipata) Land use confirmation by PS to JICA (by 3rd March 2016)
- 2) (Kanyama) Agreement document with vacating staff house (Already obtained)
- 3) (Chawama) Land ownership confirmation from area member of parliament and Community's approval for use of land (by 4th March 2016)

Soon after the prospective area for construction stock yard of each project site is shown, the followings are required on around June, 2016;

- 4) Land use confirmation by the owner or community's approval for use of land

9-5. Scope of management guidance (Soft Component)

Both sides agreed necessity of management guidance (soft component), namely 1) Guidance on the importance of maintenance system, 2) Guidance on construction of maintenance system and improvement of management capacity, 3) Guidance on development and implementation of annual maintenance planning, and 4) Guidance on construction of medical waste and wastewater treatment system. Both sides confirmed that personnel who take up a post of medical equipment technologist in each of the target hospitals supported by medical equipment officers, facility engineers and focal point persons in infrastructure stationed at district and the higher levels is to participate in the above guidance. The medical equipment officers, facility engineers and focal point persons in infrastructure are also involved in the target participants.

9-6. Maintenance service of equipment

The project will provide maintenance service for general X-ray unit, ultrasound scanner and anesthetic machine. The total maintenance service period is three years. The maintenance service includes one-year warranty period after the handover of these equipment and contract of two-year on-call based service with local agent of manufacturers. The Zambian side will bear the costs of spare parts including procurement process necessary for repairing the above equipment.

9-7. Integration of Anti Retroviral Therapy (ART) services into Out-Patient Department (OPD)

The Zambian side expressed their needs for integrating ART and OPD functions. The Team took note that enough space to be provided in OPD to allow for integration of ART services



in each of the target hospitals as shown in Annex-4. Both sides confirmed that detailed layout of OPD would be determined and finally agreed with both sides when a next mission is sent in around September, 2016.

9-8. Bed capacity

The Zambian side expressed their needs for adequate number of beds capacity to be 80 to 100 beds for the facility to qualify as 1st level hospital. The team took note of it and agreed to increase the number of beds in the target 3 hospitals.

9-9. Tax exemption

The Zambian side shall take necessary measures to exempt Japanese nationals who will be engaged in the Project from all duties and related fiscal charges which may be imposed in Zambia with respect to import and local procurement of equipment and services supplied under the verified contract.

9-10. Confidentiality of project design

Both sides confirmed that the detailed drawings and specifications of the facilities and equipment and other technical and financial information shall not be released before the tender to be held in the implementation stage of the Project.

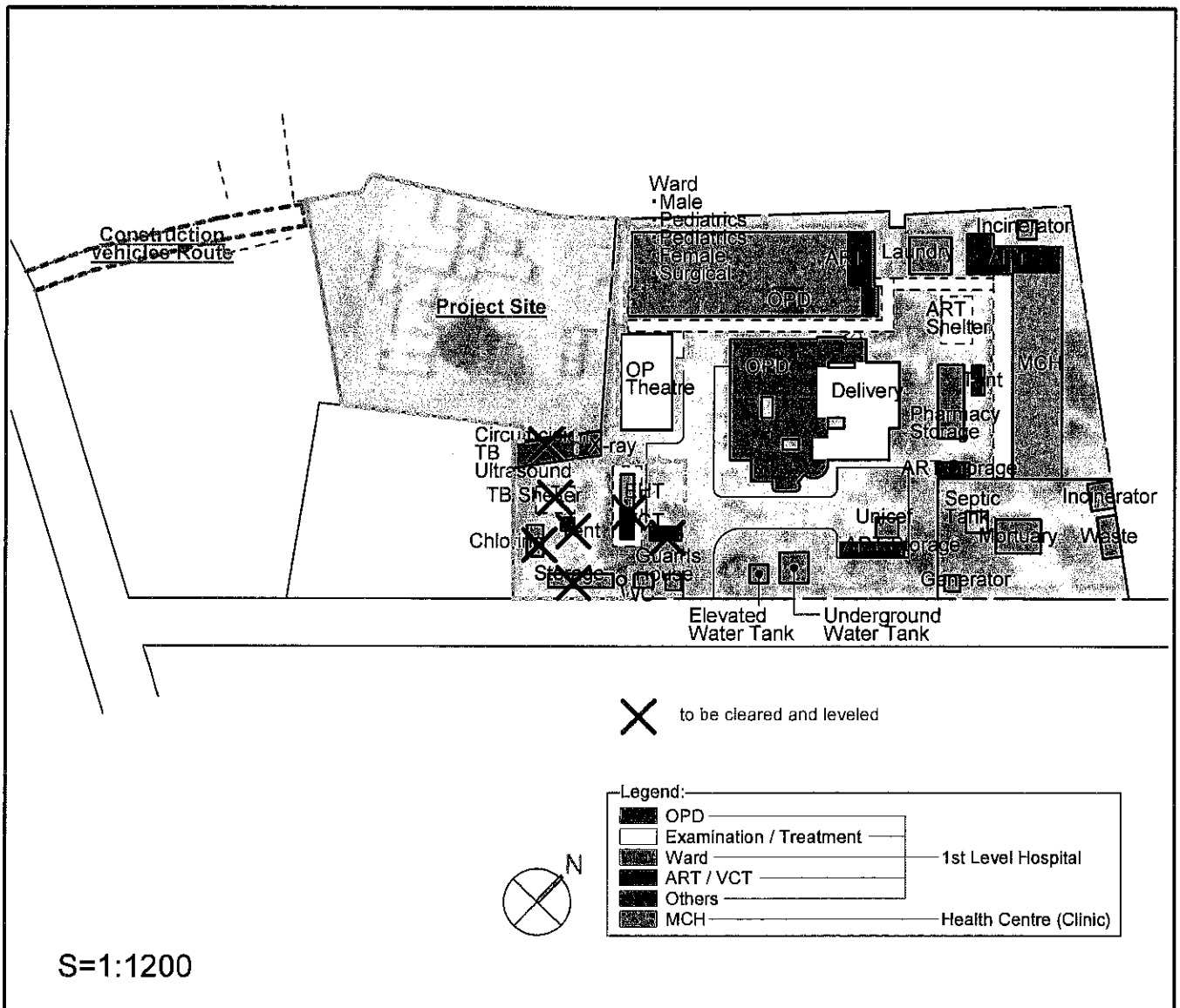
9-11. Change of scope

Both sides confirmed that the scope of the project is subject to change in case of budget restrictions. Also, both sides agreed that change of scope shall be considered based on categorized priorities described in the list of facilities and equipment as shown in Annex-4 and Annex-5.

- Annex-1 Location Map of the Project Sites
- Annex-2-1 Standard Establishment for 1st Level Hospital
- Annex-2-2 Organization Structure of Ministry of Health
- Annex-2-3 Timeline of Staff Recruitment Procedure for the Target Hospitals
- Annex-3 Scope of Works by UNICEF (MDGi) and JICA for Chipata, Kanyama, and Chawama
- Annex-4 Facility List
- Annex-5 Equipment List
- Annex-6 Japanese Grant
- Annex-7 Flow Chart of Japanese Grant Procedures
- Annex-8 Financial Flow of Japanese Grant
- Annex-9 Major Undertakings to be taken by Each Government



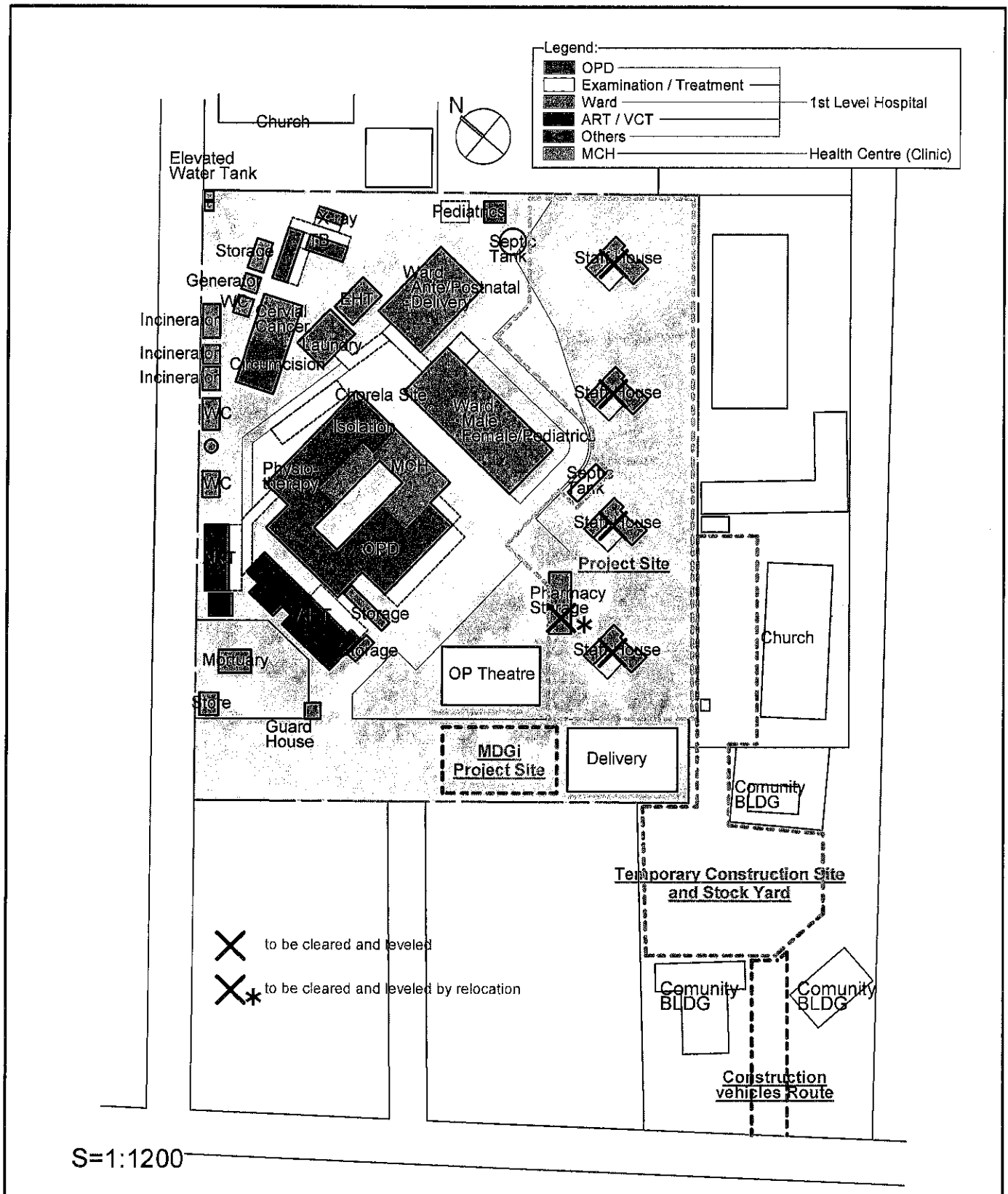
Location map of the Project Site : Chipata



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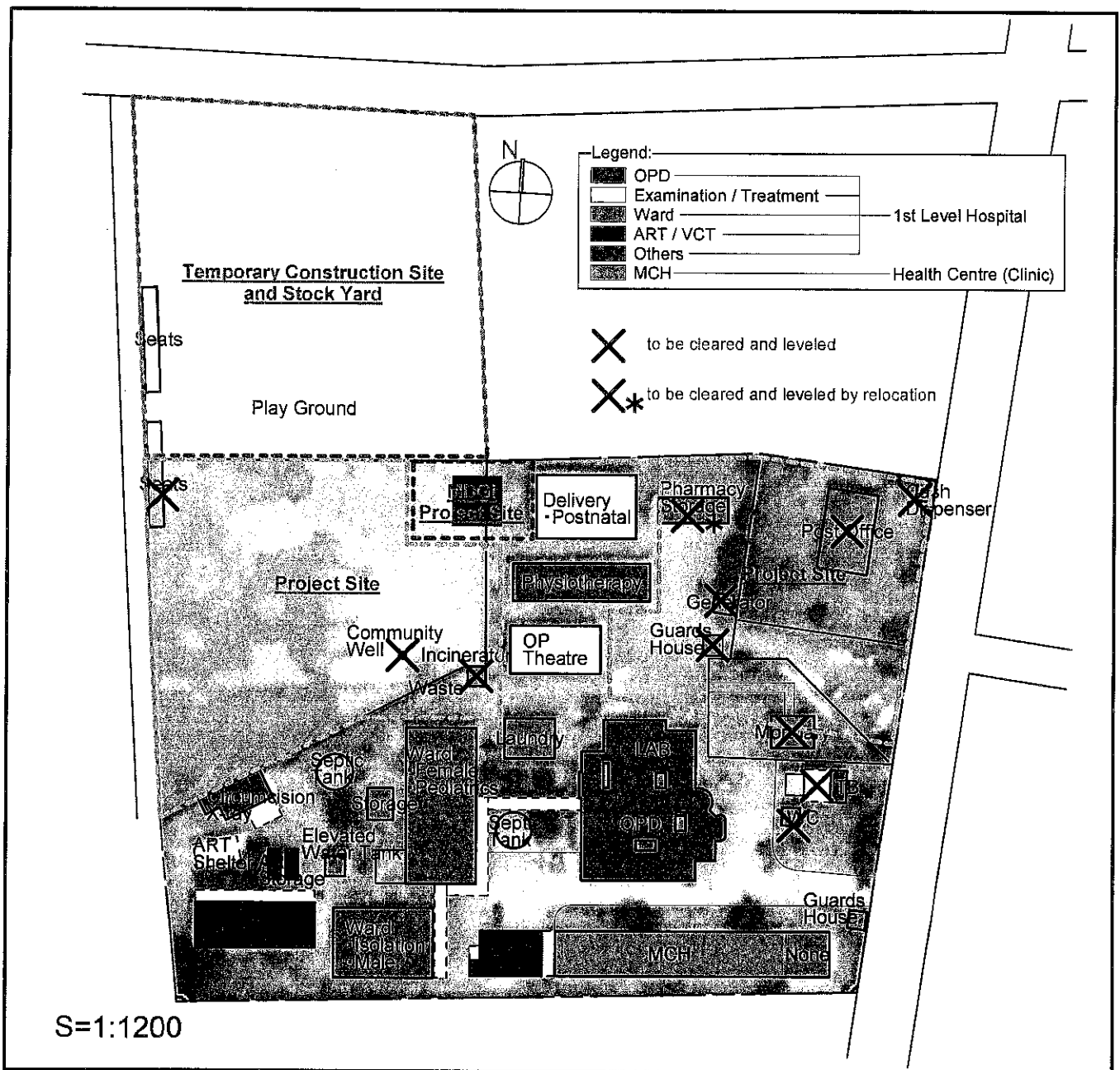
Location map of the Project Site : Kanyama



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Location map of the Project Site : Chawama



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Standard Establishment for 1st Level Hospital

	Occupation	Standard	Chipata 1st Level Hospital	Balance	Kanyama 1st Level Hospital	Balance	Chawama 1st Level Hospital	Balance
Medical Staff								
1	Medical Officer in Charge	1	1	0	0	1	0	1
2	General Medical Officer	3	0	3	3	0	1	2
3	Senior Residential Medical Officer	4	4	0	0	4	1	3
4	Medical Licentiate	3	0	3	0	3	0	3
5	Clinical Officer General	5	8	-3	9	-4	8	-3
6	Principle Clinical Officer	1	0	1	0	1	0	1
7	Pharmacy Technologist	2	2	0	5	-3	3	-1
8	Pharmacist	1	2	-1	0	1	1	0
9	Physiotherapist	1	0	1	2	-1	1	0
10	Physiotherapy Technologist	2	0	2	2	0	2	0
11	Radiographer	1	0	1	0	1	0	1
12	Radiography Technologist	2	1	1	0	2	0	2
13	Registered Nurse (Ophthalmic)	1	0	1	0	1	1	0
14	Laboratory Technologist	3	4	-1	4	-1	3	0
15	Nursing Officer	1	1	0	0	1	0	1
16	Nursing Sister	7	1	6	0	7	0	7
17	Registered Midwife	5	13	-8	7	-2	7	-2
18	Registered Nurse	18	10	8	11	7	17	1
19	Zambia Enrolled Midwife	7	10	-3	15	-8	12	-5
20	Zambia Enrolled Nurse	27	20	7	23	4	18	9
21	Registered Theatre Nurse	3	8	-5	0	3	2	1
22	Pharmacy Dispenser	0	1	-1	0	0	0	0
23	Theater Superintendent	2	0	2	0	2	0	2
24	Dental Surgeon	1	0	1	0	1	0	1
25	Dental Technologist	1	0	1	2	-1	0	1
26	Dental Therapist	2	2	0	0	2	2	0
27	Nutritionist	1	1	0	1	0	2	-1
28	Senior Clinical Officer (Anesthesia)	1	0	1	0	1	0	1
29	Clinical Officer (Anesthesia)	1	8	-7	0	1	0	1
30	Clinical Officer (Dermatology)	1	0	1	0	1	0	1
31	Clinical Officer (Psychiatry)	1	0	1	0	1	1	0
32	Clinical Officer (Ophthalmology)	1	0	1	0	1	1	0
33	Environmental Health Technologist	1	2	-1	2	-1	2	-1
	Certificate midwife *	0	3	-3	3	-3	0	0

*Certificate midwife is not in the standard establishment

	Occupation	Standard	Chipata 1st Level Hospital	Balance	Kanyama 1st Level Hospital	Balance	Chawama 1st Level Hospital	Balance
Administrative & Support Staff								
34	Assistant Human Resource Management Officer	1	0	1	0	1	0	1
35	Hospital Administrator	1	0	1	0	1	0	1
36	Medical Record Officer	1	0	1	0	1	0	1
37	Medical Equipment Technologist	2	0	2	0	2	0	2
38	Carpenter	2	0	2	0	2	0	2
39	Electrician	2	0	2	0	2	0	2
40	Refridgeration Technician	2	0	2	0	2	0	2
41	Catering Officer	1	0	1	0	1	0	1
42	Driver	2	0	2	0	2	0	2
44	Taylor	1	0	1	0	1	0	1
45	Telephone Operator	2	0	2	0	2	0	2
46	Typist	2	0	2	0	2	0	2
47	Office Orderly	2	0	2	0	2	0	2
48	Plumber	2	0	2	0	2	0	2
49	Purchasing & Supplies Officer	1	0	1	0	1	0	1
50	Purchasing & Supplies Assistant	2	0	2	0	2	0	2
51	Stores Clerk	2	0	2	0	2	0	2
52	Health Information Officer	1	0	1	0	1	0	1
53	Data Clerk	5	0	5	0	5	0	5
54	Medical Record Clerk	6	2	4	5	1	4	2
55	Revenue Collector	6	3	3	0	6	1	5
56	Psycho-social Counsellor	7	6	1	7	0	2	5
57	Darkroom Attendant	1	0	1	1	0	0	1
58	Dental Attendant	1	0	1	1	0	0	1
59	Laboratory Attendant	1	0	1	0	1	1	0
60	Station Handyman	4	3	1	1	3	1	3
61	Maid	4	9	-5	16	-12	10	-6
62	Cook	4	3	1	3	1	0	4
63	Laundryman	4	2	2	1	3	1	3
64	Porter	5	0	5	1	4	0	5
65	Mortury Attendant	3	5	-2	1	2	0	3
66	Waiter	2	0	2	2	0	0	2
67	Cleaner	6	1	5	1	5	1	5
68	Security Officer	1	0	1	0	1	0	1
69	Security Guard	9	6	3	9	0	5	4

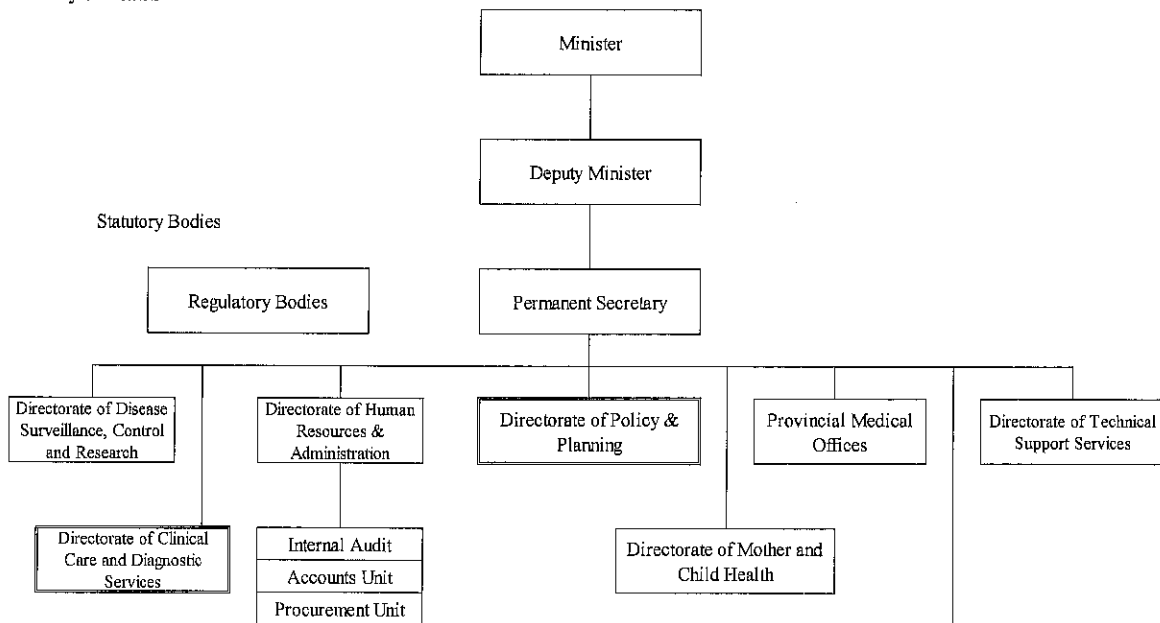
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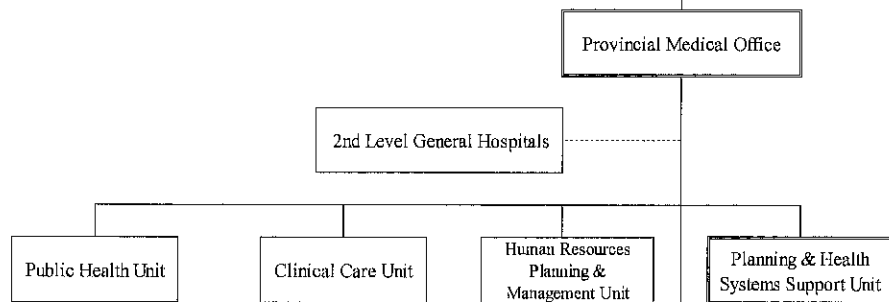
Organization Structure of Ministry of Health

MINISTRY OF HEALTH: OVERALL STRUCTURE

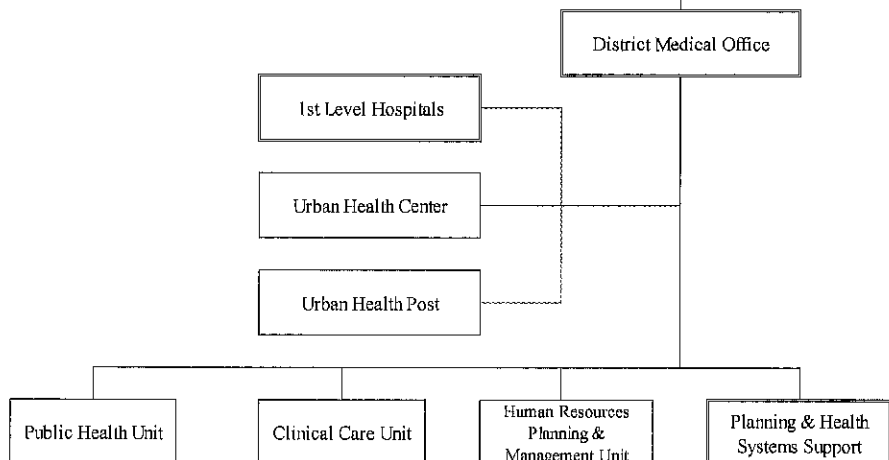
Ministry of Health



Province



District



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Scope of Works by UNICEF (MDGi) and JICA for Chipata, Kanyama, and Chawama

Facility Name	UNICEF (MDGi)	JICA
Chipata	<p>Minor rehabilitation of facilities related to the Mother and Child Health (MCH) services <u>excluding maternity ward (delivery, antenatal, and postnatal rooms)</u>. Other non-medical facilities and provision of equipment related to MCH services.</p> <p>[Tentative target]</p> <ul style="list-style-type: none"> - Repair of ceiling and re-painting the wall - Water pump system - Reservoir - Centralized incinerator - Septic tank - Generator - Outside pavement 	<p>Construction and major rehabilitation of the facility and provision of medical equipment <u>including maternity ward (delivery, antenatal, and postnatal rooms)</u>, but excluding the other MCH services and non-medical part of the facilities.</p> <p>[Tentative target]</p> <ul style="list-style-type: none"> - OPD - Operation Theatre - Maternity (delivery, antenatal, and postnatal rooms) - Surgical ward (post caesarian section) - Medical imaging
Kanyama	<p>Completion of construction of maternity ward (delivery, antenatal, and postnatal rooms) and other MCH services</p>	<p>Construction and rehabilitation of medical facilities and provision of medical equipment excluding MCH services</p> <p>[Tentative target]</p> <ul style="list-style-type: none"> - OPD - Operation Theatre - Surgical ward (post caesarian section) - Extra antenatal room and beds - Medical imaging - Physiotherapy
Chawama	<p>Expansion or rehabilitation of maternity ward (delivery, antenatal, and postnatal rooms) and other MCH services</p>	<p>Construction and rehabilitation of medical facilities and provision of medical equipment excluding maternity ward and MCH services</p> <p>[Tentative target]</p> <ul style="list-style-type: none"> - OPD - Operation Theatre - Surgical ward (post caesarian section) - Medical imaging - Physiotherapy

■ Facility List

- Continued use of existing facilities is difficult (Ageing or Facilities built for non-hospital purposes)
- Facilities with expected direct benefit for improvement of first level medical services (No Health Centre Services)
- Overlapping of other donors
- Priority for facilities requiring advanced construction
- Scale of cooperation

	Requirement	Priority		
		Chipata	Kanyama	Chawama
OPD	Registry / Cashier	A	A	A
	Pharmacy			
	Medical Consultation			
	Dental clinic			
	Eye & ENT clinic			
Medical Service	Casualty	C	C	B
	Administration	B	B	B
	Conference	C	C	C
	Library	C	C	C
	Laboratory	B	B	C
Diagnostic Block	Medical imaging (X-ray, Ultrasound)	A	A	A
	Physiotherapy	C	B	B
	Delivery (incl. Ante/Post-natal ward)	A	C	C
Theater etc.	OP Theater	A	A	A
	CSSD (sterilization)	A	A	A
Ward	Surgical ward (Post-Cesarean section)	A	A	A
	Medical ward (M/F)	C	A	B
	Incl. Male Surgical ward			
	Paediatric ward	C	C	C
	Isolation Ward	-	C	-
Supply	Kitchen & Laundry	C	C	C
	Mortuary	C	C	C
	Incinerator	C	C	C
Infrastructure	Water tank	A	A	A
	Septic tank	A	A	A
	Generator	A	A	A
UHC Service	MCH	C	C	C
	ART	A	A	A
	VCT	C	C	C

Priority A: High priority

Priority B: Middle priority (We need more analysis)

Priority C: low priority

EQUIPMENT LIST (Final draft)

A: High priority
B: Middle priority
C: Low priority

CHIPATA

No.	Items	Existing	MDGi	JICA Quantity	Priority	Note
1. OPD						
<i>1.1 Screening and consultation rooms</i>						
Add	Wheelchair	0		2	A	
Add	Stretcher	0		2	A	
3	Desk for Consulting staff	-		10	B	Quantity will be decided depends on construction plan.
4	Chair for Consulting staff	-		10	B	Quantity will be decided depends on construction plan.
5	Chair for patient	-		10	B	Quantity will be decided depends on construction plan.
6	Equipment Cabinet	-		10	B	Quantity will be decided depends on construction plan.
7	Wastebin with lid	-		10	B	Quantity will be decided depends on construction plan.
8	Examination couch, gynecological	0		1	A	
9	Examination couch without leg holders	-		5	A	
10	Bed-side screen	-		5	B	
11	Examination light	-		1	A	
12	Torch, medical, pen-sized	-		6	A	
13	Thermometer, digital	-		6	A	
14	Thermometer, mercury type	-		5	C	
15	Thermometer Jar	-		6	C	
16	Salter scale	-		1	A	
17	Weighing trousers	-		1	A	
18	Weighing scale, adult	1		2	A	Old
19	Stethoscope, binaural	-		5	A	
20	BP machine, adult	1		4	A	
21	BP machine, child	-		2	A	
22	Ear syringe	-		1	A	
23	Diagnostic set (otoscope and ophthalmoscope)	-		1	A	
24	Chart, vision-testing, Snellen type	-		1	A	
25	Patella hammer	-		1	A	
26	Vaginal speculum, small	-		3	A	
27	Vaginal speculum, medium	-		3	A	
28	Vaginal speculum, large	-		3	A	
29	Stethoscope, fetal, Pinard	-		1	C	
30	Drip stand	-		3	A	
31	Suction pump, foot-operated	-		1	C	
32	Suction pump, electric	-		1	A	
33	Ambu bag for adults (resuscitator)	-		1	A	
34	Ambu bag for children (resuscitator)	-		1	A	
35	Medicine trolley	-		3	A	
Add	Pulse oximeter, finger type	0		2	A	
Add	X-Ray film viewing box, table top	-		2	A	
Add	Diagnostic set for Eye and ENT	-		1	A	
<i>1.2 Dressing and injection rooms</i>						
36	Autoclave, electric, small	-		1	C	Refer to 5.3 Sterilization equipment
37	Autoclave, non-electric, small (39 liters)	-		1	C	
38	Sterilizing drum, small	-		2	C	
39	Timer, 60 min	-		1	C	
40	Indicator, TST control spot	-		1	C	
41	Drainage set	-		3	A	
42	Dressing set	-		3	A	
43	Suturing set	-		6	A	
44	Instrument tray, medium	-		3	A	
45	Bowl, lotion, small	-		3	C	
46	Bowl, lotion, medium	-		3	C	
47	Bowl, lotion, large	-		3	C	
30	Drip stand	-		3	A	
2. Casualty						
1	Wheelchair	-		1	A	
2	Stretcher	-		1	A	
48	Hospital bed, hospital model, two-sectioned, with mattress	-		3	A	

CHIPATA

No.	Items	Existing	MDGi	JICA Quantity	Priority	Note
49	Hospital bed bednet, treated	-		3	C	
50	Hospital bed cradle	-		1	A	
51	Bed-side screen	-		2	C	
52	Bed-side cabinet, hospital model	-		3	C	
53	Over-bed table	-		1	A	
54	Bed pan	-		1	A	
55	Urinal, male	-		1	A	
56	Sputum mug	-		1	C	
57	Drip stand	-		3	A	
58	Oxygen concentrator	-		1	A	
59	Suction pump, foot operated	-		1	A	
60	Suction pump, electric	-		1	C	
Add	Ambu Bag for Adults	-		1	A	
Add	Ambu Bag for Children	-		1	A	
Add	Diagnostic set	-		2	A	
Add	X-Ray film viewing box (negatoscope)	-		1	A	
3. All wards, except maternity ward						
3.1. Nursing stations						
61	Cupboard, lockable	-		1	C	
62	Desk	-		1	C	
63	Chair	-		4	C	
64	Equipment Cabinet	-		1	C	
65	Wastebin with lid	-		1	C	
3.2 Wards						
66	Hospital bed, hospital model, two-sectioned, with mattress	-		5	B	
67	Hospital bed bednet, treated	-		5	C	
68	Infant cot	-		2	C	
69	Infant cot bednet, treated	-		2	C	
70	Hospital bed back rest	-		1	C	
71	Hospital bed cradle	-		1	C	
72	Hospital bed elevator	-		1	C	
73	Traction frame	-		1	C	
74	Bed-side screen	-		1	C	
75	Bed-side cabinet, hospital model	-		5	C	
76	Over-bed table	-		5	C	
77	Bed pan	-		1	C	
78	Urinal, male	-		1	C	
79	Sputum mug	-		1	C	
80	Thermometer, digital	3		0	C	
81	Thermometer jar	-		5	C	
82	Weighing scale, adult	1		1	A	Old
83	Salter scale	-		1	B	
84	Weighing trowsers	-		1	B	
85	Stethoscope, binaural	-		1	A	
86	BP machine, adult	1		1	A	
87	BP machine, child	-		1	A	
88	Diagnostic set (otoscope and ophthalmoscope)	-		2	C	
89	Glucometer	-		2	A	
90	Rapid Diagnostic Test kits for malaria	-		1	C	
91	Trolley, medicine	-		1	A	
92	Autoclave, electric, small	-		1	C	
93	Sterilizing drum, small	-		1	C	
94	Timer, 60 min	-		1	C	
95	Indicator, TST control spot	-		1	C	
96	Instrument tray, medium	-		1	C	
97	Instrument tray, large	-		1	C	
98	Dressing tray, medium	-		1	A	
99	Dressing trolley	-		1	A	
100	Dressing set	-		1	A	
101	Bowl, lotion, small	-		2	C	
102	Bowl, lotion, medium	-		3	C	
103	Bowl, lotion, large	-		2	C	
104	Drip stand	-		3	A	
105	Oxygen concentrator	1		1	B	
106	Oxygen cylinder	-		1	C	
107	Suction pump, foot operated	-		1	C	

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Due

CHIPATA

No.	Items	Existing	MDGi	JICA Quantity	Priority	Note
108	Suction pump, electric	-		1	A	
Add	Pulse oximeter, finger type	-		2	A	
	4. labour ward/maternity					
	<i>4.1 Sister's office</i>					
109	Desk for Consulting staff	-		1	B	
110	Chair for Consulting staff	-		2	B	
111	Chair for patient	-		2	B	
112	Cupboard, lockable	-		1	B	
113	Wastebin with lid	-		1	B	
	<i>4.2 First stage room</i>					
114	Examination couch, gynecological	-		1	A	
115	Footstool, one-step	-		1	A	
116	Bed-side screen	-		1	C	
117	CTG machine	-	1	0	C	MDGi
118	Examination light	-	2	0	C	MDGi
119	Stethoscope, fetal, Pinard	-		2	A	
120	Fetal heart detector	1		2	C	MDGi
121	Vaginal speculum, small	-		2	A	
122	Vaginal speculum, medium	-		4	A	
123	Vaginal speculum, large	-		4	A	
124	RPR rotator	-		1	B	
	<i>4.3 Delivery room</i>					
125	Instrument cabinet	-		1	C	
126	Instrument trolley	-		2	C	
127	Delivery bed	4	6	0	C	MDGi
128	Drip stand	-		4	A	
129	Footstool, one-step	-		4	A	
130	Bed-side screen	-		1	C	
131	Operating stool, revolving	-		4	A	
132	Vaginal delivery/episiotomy set	-		5	A	
133	Kick-about bowl	-		2	B	
134	Manual vacuum aspiration (MVA) kit	-		5	A	
135	Vacuum extractor, manual	-		1	A	
136	Vacuum extractor, electrical	-		2	A	
137	Weighing scale, infant, beam type	-		1	A	
138	Wall clock	-		1	C	
139	Resuscitaire	1	1	0	C	MDGi
140	Neonatal incubator	5	1	0	C	MDGi, 3units are in OT
141	Suction pump, electric	-		2	A	
142	Suction pump, foot-operated	1	1	0	C	MDGi
Add	Fetal doppler	-	1	1	C	MDGi
Add	BP machine, adult	1		1	A	
Add	Transport Incubator	-		1	A	
	<i>4.4 Recovery room</i>					
143	Hospital bed, hospital model, two-sectioned, with mattress	-		2	C	
144	Infant cot with mattress	-		2	C	
145	Bed-side screen	-		1	C	
146	Bed-side cabinet, hospital model	-		2	C	
147	Over-bed table	-		2	C	
148	Bed pan	-		1	C	
149	Drip stand	-		1	C	
	<i>4.5 Postnatal ward</i>					
150	Hospital bed, hospital model, two-sectioned, with mattress	-		24	B	Quantity will be decided depends on construction plan. 16 for antepartum, 8 for postpartum
151	Bednet, long lasting insecticide treated, for hospital bed	-		10	C	
152	Infant cot with mattress	-		2	C	MDGi
153	Bednet, long lasting insecticide treated, for hospital cot	-		2	C	
154	Bed-side screen	-		2	C	
155	Bed-side cabinet, hospital model	-		10	C	
156	Over-bed table	-		10	C	
157	Bed pan	-		1	A	
158	Phototherapy machine	-		1	C	
159	Oxygen concentrator	1	1	0	C	MDGi
Add	Hospital bed, hospital model, two-sectioned, with mattress	6	7	12	B	MDGi
	<i>4.6 Maternity ward</i>					

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Paul

CHIPATA

No.	Items	Existing	MDGi	JICA Quantity	Priority	Note
Add	<i>Hospital Bed</i>	-		10	A	Quantity will be decided depends on construction plan.
161	Vaginal speculum, small	-		1	A	
162	Vaginal speculum, medium	-		2	A	
163	Vaginal speculum, large	-		2	A	
164	Thermometer, digital	-		2	A	
165	Thermometer jar	-		2	C	
166	Weighing scale, infant, beam type	-	1	0	C	MDGi
167	Stethoscope, binaural	-		2	A	
168	BP machine, adult	-		2	A	
169	Glucometer	-		1	A	
170	Rapid Diagnostic Test kits for malaria	-		1	C	
171	Medicine trolley	-		2	A	
172	Autoclave, electric, medium	1		1	C	Refer to 5.3 Sterilization equipment
173	Sterilizing drum, small	-		2	C	Refer to 5.3 Sterilization equipment
174	Sterilizing drum, medium	-		2	C	Refer to 5.3 Sterilization equipment
175	Timer, 60 min	-		1	C	
176	Indicator, TST control spot	-		1	C	
177	Instrument tray, medium	-		1	C	
178	Instrument tray, large	-		1	C	
179	Dressing tray, medium	-		1	A	
180	Dressing trolley	-		1	A	
181	Dressing set	-		2	A	
182	Bowl, lotion, small	-		2	C	
183	Bowl, lotion, medium	-		2	C	
184	Bowl, lotion, large	-		2	C	
185	Drip stand	-		6	A	
Add	<i>Bed-side cabinet, hospital model</i>	-		24	B	
Add	<i>Infant cot with mattress</i>	-	1	4	B	MDGi
	5. Operating theatre					
	5.1 theatre equipment					
186	Ambu bag for adults (resuscitator)	-		1	A	
187	Ambu bag for children (resuscitator)	-		1	A	
188	Anesthetic machine	2		1	B	1 unit is old
189	Bowl, lotion, large	-		6	C	
190	BP machine, adult	-		2	A	
191	Bucket, stainless steel with cover	-		4	A	
192	Electro surgical unit	1		1	A	
193	Dangerous drugs, cabinet	-		1	C	
194	Defibrillator	1		1	B	
195	Dressing tray, large	-		3	C	
196	Dressing tray, medium	-		2	C	
197	Dressing tray, small	-		1	C	
198	Dressing trolley	-		1	C	
199	Drip stand	-		2	A	
200	Ear syringe	-		1	C	
201	Footstool, one-step	-		2	A	
202	Instrument cabinet	-		1	C	
203	Instrument tray, large	-		16	C	
204	Instrument trolley	-		2	C	
205	Kick-about bowl	-		6	C	
206	Laryngoscope set	-		2	A	
207	Mayo table	-		2	A	
208	Neonatal resuscitaire	-		1	C	MDGi, refer to 140
209	Operating stools, revolving	-		2	A	
210	Operating table	2	1	1	C	MDGi
211	Operating-room light, fixed, ceiling mounted	1		1	A	
212	Operating-room light, portable, with stand	1		1	A	
213	Oxygen concentrator	2		2	A	
214	Oxygen cylinder	-		8	C	
215	Patient trolley	-		2	A	
216	Pulse oximeter, separate	-	1	1	B	MDGi
217	Recovery bed	-		2	A	
218	Stand, single bowl	-		4	C	
219	Stetoscope, binaural	-		4	A	
220	Suction pump, electric	3		2	C	
221	Ventilator	-		1	C	
222	Vital signs monitor, portable	2		2	A	

CHIPATA

No.	Items	Existing	MDGi	JICA Quantity	Priority	Note
223	Wall clock	-		1	C	
224	X-Ray film viewing box (negatoscope)	-		1	A	
Add	Medicine refrigerator	-		1	A	
5.2 Theatre instrument sets						
225	Set, amputation	-		3	A	
226	Set, bilateral tubal ligation	-		3	A	
227	Set, caesarian section	-		6	A	
228	Set, decapitation	-		3	C	
Add	Set, Hysterectomy	0		1	A	
229	Set, dilatation and curetage Set (D+C set)	-		3	A	
230	Set, general	-		3	C	
231	Set, laparotomy	-		3	A	
232	Set, minor surgery	-		3	A	
5.3 Sterilization equipment						
233	Autoclave, electric, 400 liters	-		1	A	
234	Bed pan washer	-		1	A	
235	Sterilizing drum, large	-		4	A	
236	Sterilizing drum, medium	-		4	A	
237	Ultrasonic cleaner	-		1	C	
6. Dental unit						
238	Bench top autoclave	0		1	A	
239	Dental amalgamator	0		1	C	
240	Dental chair	0		1	A	
241	Dental compressor	0		1	A	
242	Dental film processor or developer	0		1	A	
243	Dental instrument cabinet	0		1	A	
244	Dental instrument set	0		3	A	
245	Dental Instrument tray	0		2	C	
246	Dental light	0		1	C	
247	Dental light curing unit	0		1	A	
248	Dental treatment trolley	0		1	A	
249	Dental treatment unit	0		1	A	
250	Dental x-ray unit	0		1	A	
251	Dentist stool	0		1	A	
252	Ultrasonic dental scaler	0		1	A	
Add	Lead apron	0		1	A	
7. Pharmacy						
253	20 ml medicine cup	-		2	A	
254	Drug cabinet, lockable	-		1	A	
255	Graduated glass measure	-		2	A	
256	Mixer	-		1	A	
257	Mortar and pestle	-		2	A	
258	Pharmacy balance	-		1	A	
259	Pharmacy heavy duty trolley	-		1	A	
260	Pharmacy refrigerator	-		1	A	
261	Tablet and capsule counter	-		1	A	
262	Tablet counting tray	-		1	A	
263	Vaccine refrigerator	-		1	B	
264	Water distiller	-		1	A	
265	Water filter	-		1	C	
8. Laboratory						
266	Anaerobic jar	-		1	B	
267	Analytical balance	-		1	A	
268	Autoclave for laboratory, medium	-		1	A	
269	Binocular microscope	2		1	C	
270	Blood bank refrigerator	-		1	A	
271	Bunsen burner	-		1	C	
272	CD4 counting machine	1		1	C	
273	Centrifuge, small	1		1	C	
274	Chemistry analyzer	1		1	C	
275	Differential counter	-		1	B	
276	Flammable liquid cabinet	-		1	B	
277	Hematology analyzer	2		1	C	
278	Hot air oven	-		1	B	
279	Hot plate, controlled temperature	-		1	A	
280	Laboratory incubator, medium	-		1	A	
281	Laboratory refrigerator/freezer	-		2	A	
282	Microhaematocrit centrifuge	-		1	A	

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No.	Items	Existing	MDGI	JICA Quantity	Priority	Note
283	Micropipettes, automated	-		1	A	
284	pH meter	-		1	A	
285	Roller/mixer	-		1	B	
286	RPR rotator	-		1	B	
287	Spirit lamp	-		2	B	
288	Timer	-		2	A	
289	Voltex for CD4 counting	-		1	C	
290	Water bath	-		1	A	
291	Water distiller	1		1	A	Old
9. Radiology department						
292	Actinic marker	-		1	A	
293	Film processor, automatic	-		1	A	
294	Darkroom safety light holder	-		2	C	
295	Dryer for manual film processor	-		1	C	
296	Electrolyte Silver Recovery Kit	-		1	C	
297	Film hanger (set of five sizes)	-		4	C	
298	HSG kit	-		1	C	
299	Lead apron	-		1	A	
300	Lead gloves	-		1	C	
301	Film processor, manual	-		1	C	
302	Protective lead shield or screen	-		1	C	
303	Quality assurance kit	-		1	C	
304	Ultrasound scanner with printer	1		1	A	Old
305	X-ray film stationery grid	-		1	B	
306	X-Ray film viewing box (negatoscope)	-		1	A	
307	X-Ray loading bench (Film hopper)	-		1	A	High priority of MOH
308	X-ray unit, fixed	-		1	A	
309	X-ray unit, mobile	-		1	A	High priority of MOH
Add	Portable ultrasound scanner for Gynecology	-		1	A	
10. Mortuary						
310	20 liter bucket	-		1	C	
311	Autopsy saw	-		1	C	
312	Autopsy set	-		1	C	
313	Autopsy table	-		1	C	
314	Mortuary fridge/unit (4 trays)	-		1	C	
315	Mortuary trolley	-		1	C	
316	Organ table	-		1	C	
317	Spring balance	-		1	C	
11. Ambulance						
318	Ambulance	-		1	C	
12. Maintenance						
319	Maintenance Set	0		1	A	Includes Oxygen analyzer, ECG simulator

EQUIPMENT LIST (Final draft)

A: High priority
B: Middle priority
C: Low priority

KANYAMA

No.	Items	Existing	MDGI	JICA Quantit y	Priority	Note
1. OPD						
<i>1.1 Screening and consultation rooms</i>						
Add	Wheelchair	0		2	A	
Add	Stretcher	0		2	A	
3	Desk for Consulting staff	-		5	B	Quantity will be decided depends on construction plan.
4	Chair for Consulting staff	-		5	B	Quantity will be decided depends on construction plan.
5	Chair for patient	-		5	B	Quantity will be decided depends on construction plan.
6	Equipment Cabinet	-		5	B	Quantity will be decided depends on construction plan.
7	Wastebin with lid	-		5	B	Quantity will be decided depends on construction plan.
8	Examination couch, gynecological	0		1	A	
9	Examination couch without leg holders	0		5	A	
10	Bed-side screen	0		5	B	
11	Examination light	0		1	A	
12	Torch, medical, pen-sized	0		6	A	
13	Thermometer, digital	-		6	A	
14	Thermometer, mercury type	0		5	C	
15	Thermometer Jar	0		6	C	
16	Salter scale	1		1	A	Old
17	Weighing trousers	1		1	A	Old
18	Weighing scale, adult	0		2	A	
19	Stethoscope, binaural	-		5	A	
20	BP machine, adult	-		5	A	
21	BP machine, child	-		2	A	
22	Ear syringe	0		1	A	
23	Diagnostic set (otoscope and ophthalmoscope)	0		1	C	
24	Chart, vision-testing, Snellen type	0		1	A	
25	Patella hammer	0		1	A	
26	Vaginal speculum, small	-		2	A	
27	Vaginal speculum, medium	-		2	A	
28	Vaginal speculum, large	-		2	A	
29	Stethoscope, fetal, Pinard	2		1	C	
31	Suction pump, foot-operated	0		1	C	
32	Suction pump, electric	0		1	A	
33	Ambu bag for adults (resuscitator)	0		1	A	
34	Ambu bag for children (resuscitator)	0		1	A	
35	Medicine trolley	0		3	A	
Add	Pulse oximeter, finger type	0		2	A	
Add	Medicine refrigerator	0		1	B	
Add	X-Ray film viewing box, table top	0		2	A	
Add	Diagnostic set for Eye and ENT	0		1	A	
<i>1.2 Dressing and injection rooms</i>						
36	Autoclave, electric, small	0		1	C	Refer to 5.3 Sterilization equipment
37	Autoclave, non-electric, small (39 liters)	0		1	C	
38	Sterilizing drum, small	0		2	C	
39	Timer, 60 min	0		1	C	
40	Indicator, TST control spot	0		1	C	
41	Drainage set	0		3	A	
42	Dressing set	0		3	A	
43	Suturing set	0		3	A	
44	Instrument tray, medium	0		3	A	
45	Bowl, lotion, small	0		3	C	
46	Bowl, lotion, medium	0		3	C	
47	Bowl, lotion, large	0		3	C	
30	Drip stand	0		3	A	
Add	Treatment table	1		1	A	Old
2. Casualty						
1	Wheelchair	0		2	A	
2	Stretcher	0		2	A	

KANYAMA

No.	Items	Existing	MDGI	JICA Quantit y	Priority	Note
48	Hospital bed, hospital model, two-sectioned, with mattress	0		3	A	
49	Hospital bed bednet, treated	0		3	C	
50	Hospital bed cradle	0		1	A	
51	Bed-side screen	0		2	C	
52	Bed-side cabinet, hospital model	0		3	C	
53	Over-bed table	0		1	A	
54	Bed pan	0		1	A	
55	Urinal, male	0		1	A	
56	Sputum mug	0		1	C	
57	Drip stand	0		3	A	
58	Oxygen concentrator	0		2	A	
59	Suction pump, foot operated	0		1	C	
60	Suction pump, electric	0		1	A	
Add	Ambu Bag for Adults	0		1	A	
Add	Ambu Bag for Children	0		1	A	
Add	Diagnostic set	0		2	A	
Add	X-Ray film viewing box (negatoscope)	0		1	A	
	3. All wards, except maternity ward					
	3.1. Nursing stations					
61	Cupboard, lockable	-		1	B	
62	Desk	-		1	B	
63	Chair	-		4	B	
64	Equipment Cabinet	-		1	B	
65	Wastebin with lid	-		1	B	
	3.2. Wards					
66	Hospital bed, hospital model, two-sectioned, with mattress	-		36	A	Quantity will be decided depends on construction plan.
67	Hospital bed bednet, treated	-		5	C	
68	Infant cot	-		2	C	
69	Infant cot bednet, treated	-		2	C	
70	Hospital bed back rest	-		1	C	
71	Hospital bed cradle	-		4	A	
72	Hospital bed elevator	-		1	B	
73	Traction frame	-		1	C	
74	Bed-side screen	-		1	C	
75	Bed-side cabinet, hospital model	-		5	C	
76	Over-bed table	-		5	C	
77	Bed pan	-		1	C	
78	Urinal, male	-		1	C	
79	Sputum mug	-		1	C	
80	Thermometer, digital	-		2	A	
81	Thermometer jar	-		2	C	
82	Weighing scale, adult	-		1	A	
83	Salter scale	1		1	C	
84	Weighing trousers	1		1	C	
85	Stethoscope, binaural	-		2	A	
86	BP machine, adult	1		2	A	Old
87	BP machine, child	0		2	A	
88	Diagnostic set (otoscope and ophthalmoscope)	-		2	C	
89	Glucometer	0		2	A	
90	Rapid Diagnostic Test kits for malaria	-		1	C	
91	Trolley, medicine	-		2	A	
92	Autoclave, electric, small	0		1	C	Refer to 5.3 Sterilization equipment
93	Sterilizing drum, small	0		1	C	
94	Timer, 60 min	-		1	C	
95	Indicator, TST control spot	-		1	C	
96	Instrument tray, medium	-		1	C	
97	Instrument tray, large	-		1	C	
98	Dressing tray, medium	-		2	C	
99	Dressing trolley	-		2	C	
100	Dressing set	-		2	C	
101	Bowl, lotion, small	-		2	C	

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
102	Bowl, lotion, medium	-		3	C	
103	Bowl, lotion, large	-		2	C	
104	Drip stand	-		6	A	
105	Oxygen concentrator	1		2	A	Old
106	Oxygen cylinder	-		1	C	
107	Suction pump, foot operated	0		1	A	
108	Suction pump, electric	0		1	C	
Add	Pulse oximeter, finger type	0		2	A	
	4. labour ward/maternity					
	<i>4.1 Sister' office</i>					
109	Desk for Consulting staff	-		1	C	
110	Chair for Consulting staff	-		2	C	
111	Chair for patient	-		2	C	
112	Cupboard, lockable	-		1	C	
113	Wastebin with lid	-		1	C	
	4.2 First stage room 2					
114	Examination couch, gynecological	0		1	C	
115	Footstool, one-step	0		1	C	
116	Bed-side screen	0		1	C	
117	CTG machine	-	1	0	C	MDGi
118	Examination light	-	1	0	C	MDGi
119	Stethoscope, fetal, Pinard	2		2	A	Old
120	Fetal heart detector	-	1	0	C	MDGi
121	Vaginal speculum, small	-		2	B	Old
122	Vaginal speculum, medium	-		4	B	Old
123	Vaginal speculum, large	-		4	B	Old
124	RPR rotator	0		1	C	
Add	Hospital Bed	-		20	A	Quantity will be decided depends on construction plan.
	4.3 Delivery room					
125	Instrument cabinet	-		1	C	MDGi
126	Instrument trolley	-		2	C	MDGi
127	Delivery bed	4	8	0	C	MDGi
128	Drip stand	-		4	C	MDGi
129	Footstool, one-step	-		4	C	MDGi
130	Bed-side screen	-	6	0	C	MDGi
131	Operating stool, revolving	-		4	C	MDGi
132	Vaginal delivery /episiotomy set	-		8	C	MDGi
133	Kick-about bowl	-		2	C	MDGi
134	Manual vacuum aspiration (MVA) kit	-		5	C	MDGi
135	Vacuum extractor, manual	-		1	C	MDGi
136	Vacuum extractor, electrical	-		1	C	MDGi
137	Weighing scale, infant, beam type	-		1	C	MDGi
138	Wall clock	-		1	C	MDGi
139	Resuscitaire (Infant warmer)	1	1	0	C	MDGi
140	Neonatal incubator	1	2	0	C	MDGi
141	Suction pump, electric	-		1	C	MDGi
142	Suction pump, foot-operated	-	1	0	C	MDGi
Add	Fetal doppler	-		1	C	MDGi
Add	BP machine, adult	-		1	C	MDGi
	4.4 Recovery room					
143	Hospital bed, hospital model, two-sectioned, with mattress	-		2	C	
144	Infant cot with mattress	-		2	C	
145	Bed-side screen	-		1	C	
146	Bed-side cabinet, hospital model	-		2	C	
147	Over-bed table	-		2	C	
148	Bed pan	-		1	C	
149	Drip stand	-		1	C	
	4.5 Postnatal ward					
150	Hospital bed, hospital model, two-sectioned, with mattress	-		10	C	
151	Bednet, long lasting insecticide treated, for hospital bed	-		10	C	
152	Infant cot with mattress	-		2	C	

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
153	Bednet, long lasting insecticide treated, for hospital cot	-		2	C	
154	Bed-side screen	-		2	C	
155	Bed-side cabinet, hospital model	-		10	C	
156	Over-bed table	-		10	C	
157	Bed pan	-		1	C	
158	Phototherapy machine	-	1	0	C	MDGi
159	Oxygen concentrator	-	1	0	C	MDGi
160	Oxygen cylinder	-		4	C	
4.6 Maternity ward						
161	Vaginal speculum, small	-		1	A	
162	Vaginal speculum, medium	-		2	A	
163	Vaginal speculum, large	-		2	A	
164	Thermometer, digital	-		2	A	
165	Thermometer jar	-		2	C	
166	Weighing scale, infant, beam type	-		1	A	
167	Stethoscope, binaural	-		4	A	
168	BP machine, adult	-		2	A	
169	Glucometer	-		2	A	
170	Rapid Diagnostic Test kits for malaria	-		1	C	
171	Medicine trolley	-		2	A	
172	Autoclave, electric, medium	-		1	C	Refer to 5.3 Sterilization equipment
173	Sterilizing drum, small	-		2	C	
174	Sterilizing drum, medium	-		2	C	
175	Timer, 60 min	-		1	C	
176	Indicator, TST control spot	-		1	C	
177	Instrument tray, medium	-		1	C	
178	Instrument tray, large	-		1	C	
179	Dressing tray, medium	-		2	A	
180	Dressing trolley	-		2	A	
181	Dressing set	-		2	A	
182	Bowl, lotion, small	-		2	C	
183	Bowl, lotion, medium	-		2	C	
184	Bowl, lotion, large	-		2	C	
185	Drip stand	-		8	A	
Add	Hospital bed,(meet conform) hospital model, two-sectioned, with mattress	-		12	B	Quantity will be decided depends on construction plan.
Add	Bed-side cabinet, hospital model	-		12	B	Quantity will be decided depends on construction plan.
Add	Infant cot with mattress	-		5	B	Quantity will be decided depends on construction plan.
5. Operating theatre						
5.1 theatre equipment						
186	Ambu bag for adults (resuscitator)	0		1	A	
187	Ambu bag for children (resuscitator)	0		1	A	
188	Anesthetic machine	2		1	B	1 unit is old
189	Bowl, lotion, large	-		6	C	
190	BP machine, adult	-		2	A	
191	Bucket, stainless steel with cover	-		4	A	
192	Electro surgical unit	1		1	A	Old
193	Dangerous drugs, cabinet	0		1	C	
194	Defibrillator	1		1	C	
195	Dressing tray, large	-		3	C	
196	Dressing tray, medium	-		2	C	
197	Dressing tray, small	-		1	C	
198	Dressing trolley	-		1	C	
199	Drip stand	2		2	A	Old
200	Ear syringe	-		1	C	
201	Footstool, one-step	-		2	A	
202	Instrument cabinet	-		1	C	
203	Instrument tray, large	-		16	C	
204	Instrument trolley	-		2	C	
205	Kick-about bowl	0		6	C	
206	Laryngoscope set	-		2	A	
207	Mayo table	-		2	A	
208	Neonatal resuscitair	1		1	A	1 unit is old
209	Operating stools, revolving	0		2	A	

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No.	Items	Existing	MDGI	JICA Quantit y	Priority	Note
210	Operating table	1	1	0	C	MDGI
211	Operating-room light, fixed, ceiling mounted	1		2	A	1 unit is old
212	Operating-room light, portable, with stand	1		2	A	1 unit is old
213	Oxygen concentrator	0		3	A	
214	Oxygen cylinder	-		8	C	Out of scope
215	Patient trolley	1		2	A	Old
216	Pulse oximeter, separate	0		2	A	
217	Recovery bed	0		2	A	
218	Stand, single bowl	0		4	C	
219	Stetoscope, binaural	4		4	A	Old
220	Suction pump, electric	2		2	C	
221	Ventilator	0		1	C	
222	Vital signs monitor, portable	1		2	A	1 unit is old
223	Wall clock	0		1	C	
224	X-Ray film viewing box (negatoscope)	0		1	A	
Add	Medicine refrigerator	1		1	A	Old
	5.2 Theatre instrument sets					
225	Set, amputation	-		3	A	
226	Set, bilateral tubal ligation	-		3	A	
227	Set, caesarian section	-		6	A	Old
228	Set, decapitation	-		3	C	
229	Set, dilatation and curetage Set (D+C set)	-		3	A	
230	Set, general	-		3	C	
231	Set, laparotomy	-		3	A	
232	Set, minor surgery	-		3	A	
	5.3 Sterilization equipment					
233	Autoclave, electric, 400 liters	1		1	A	Old
234	Bed pan washer	0		1	A	
235	Sterilizing drum, large	-		4	A	
236	Sterilizing drum, medium	-		4	A	
237	Ultrasonic cleaner	0		1	C	
	6. Dental unit					
238	Bench top autoclave	1		1	A	Old
239	Dental amalgamator	0		1	C	
240	Dental chair	1		1	A	Old
241	Dental compressor	1		1	A	Old
242	Dental film processor or developer	1		1	A	Old
243	Dental instrument cabinet	0		1	A	
244	Dental instrument set	-		3	A	Old
245	Dental Instrument tray	0		2	C	
246	Dental light	0		1	C	Include in Dental chair
247	Dental light curing unit	0		1	A	
248	Dental treatment trolley	0		1	A	
249	Dental treatment unit	0		1	B	
250	Dental x-ray unit	1		1	A	Old
251	Dentist stool	0		1	A	
252	Ultrasonic dental scaler	0		1	A	
Add	Lead apron	0		1	A	
	7. Pharmacy					
253	20 ml medicine cup	-		1	A	
254	Drug cabinet, lockable	-		1	A	
255	Graduated glass measure	-		1	A	
256	Mixer	-		1	A	
257	Mortar and pestle	-		2	B	
258	Pharmacy balance	-		1	A	
259	Pharmacy heavy duty trolley	-		1	A	
260	Pharmacy refrigerator	-		1	A	
261	Tablet and capsule counter	-		1	A	
262	Tablet counting tray	-		1	A	
263	Vaccine refrigerator	-		1	B	
264	Water distiller	-		1	A	
265	Water filter	-		1	C	

Due

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
8. Laboratory						
266	Anaerobic jar	-		1	B	
267	Analytical balance	-		1	A	
268	Autoclave for laboratory, medium	0		1	A	
269	Binocular microscope	-		1	A	
270	Blood bank refrigerator	0		1	A	
271	Bunsen burner	-		1	C	
272	CD4 counting machine	1		1	C	
273	Centrifuge, small	1		1	A	Old
274	Chemistry analyzer	1		1	C	
275	Differential counter	-		1	A	
276	Flammable liquid cabinet	-		1	A	
277	Hematology analyzer	1		1	C	
278	Hot air oven	-		1	A	
279	Hot plate, controlled temperature	-		1	A	
280	Laboratory incubator, medium	1		1	A	Old
281	Laboratory refrigerator/freezer	-		2	A	
282	Microhaematocrit centrifuge	0		1	A	
283	Micropipettes, automated	-		1	A	
284	pH meter	0		1	A	
285	Roller/mixer	-		1	A	
286	RPR rotator	-		1	A	
287	Spirit lamp	-		2	C	
288	Timer	-		2	A	
289	Voltex for CD4 counting	-		1	C	
290	Water bath	-		1	A	
291	Water distiller	1		1	A	Old
9. Radiology department						
292	Actinic marker	-		1	A	
293	Film processor, automatic	0		1	A	
294	Darkroom safety light holder	-		2	C	
295	Dryer for manual film processor	-		1	C	
296	Electrolyte Silver Recovery Kit	-		1	C	
297	Film hanger (set of five sizes)	-		4	C	
298	HSG kit	-		1	C	
299	Lead apron	-		1	A	
300	Lead gloves	-		1	C	
301	Film processor, manual	-		1	C	
302	Protective lead shield or screen	-		1	C	
303	Quality assurance kit	-		1	C	
304	Ultrasound scanner with printer	-		1	A	
305	X-ray film stationery grid	-		1	B	
306	X-Ray film viewing box (negatoscope)	0		1	A	
307	X-Ray loading bench (Film hopper)	0		1	A	High priority of MOH
308	X-ray unit, fixed	0		1	A	
309	X-ray unit, mobile	0		1	A	High priority of MOH
Add	Portable ultrasound scanner for Gynecology	0		1	A	
10. Mortuary						
310	20 liter bucket	-		1	C	
311	Autopsy saw	-		1	C	
312	Autopsy set	-		1	C	
313	Autopsy table	-		1	C	
314	Mortuary fridge/unit (4 trays)	-		1	C	
315	Mortuary trolley	-		1	C	
316	Organ table	-		1	C	
317	Spring balance	-		1	C	
11. Ambulance						
318	Ambulance	0		1	C	
12. Maintenance						
319	Maintenance Set	0		1	A	Include Oxygen analyzer, ECG sumilater

EQUIPMENT LIST (Final draft)

A: High priority
B: Middle priority
C: Low priority

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
1. OPD						
<i>1.1 Screening and consultation rooms</i>						
3	Desk for Consulting staff	-		10	B	Quantity will be decided depends on construction plan.
4	Chair for Consulting staff	-		10	B	
5	Chair for patient	-		10	B	
6	Equipment Cabinet	-		10	B	
7	Wastebin with lid	-		10	B	
8	Examination couch, gynecological	-		1	A	
9	Examination couch without leg holders	-		4	A	
10	Bed-side screen	-		5	B	
11	Examination light	-		1	A	
12	Torch, medical, pen-sized	-		5	A	
13	Thermometer, digital	-		5	A	
14	Thermometer, mercury type	-		5	C	
15	Thermometer Jar	-		6	C	
16	Salter scale	-		1	A	
17	Weighing trousers	-		1	A	
18	Weighing scale, adult	-		1	A	
19	Stethoscope, binaural	-		5	A	
20	BP machine, adult	1		5	A	Old
21	BP machine, child	-		2	A	
22	Ear syringe	-		2	A	
23	Diagnostic set (otoscope and ophthalmoscope)	-		1	C	
24	Chart, vision-testing, Snellen type	-		1	A	
25	Patella hammer	-		1	A	
26	Vaginal speculum, small	-		2	A	
27	Vaginal speculum, medium	-		4	A	
28	Vaginal speculum, large	-		2	A	
29	Stethoscope, fetal, Pinard	-		1	C	
31	Suction pump, foot-operated	-		1	C	
32	Suction pump, electric	-		1	A	
33	Ambu bag for adults (resuscitator)	-		1	A	
34	Ambu bag for children (resuscitator)	-		1	A	
35	Medicine trolley	-		3	A	
Add	Pulse oximeter, finger type	-		2	A	
Add	X-Ray film viewing box, table top	0		2	A	
Add	Diagnostic set for Eye and ENT	-		1	A	
<i>1.2 Dressing and injection rooms</i>						
36	Autoclave, electric, small	-		1	C	Refer to 5.3 Sterilization equipment
37	Autoclave, non-electric, small (39 liters)	-		1	C	Refer to 5.3 Sterilization equipment
38	Sterilizing drum, small	-		2	C	Refer to 5.3 Sterilization equipment
39	Timer, 60 min	-		1	C	
40	Indicator, TST control spot	-		1	C	
41	Drainage set	-		3	A	
42	Dressing set	-		3	A	
43	Suturing set	-		3	A	
44	Instrument tray, medium	-		3	A	
45	Bowl, lotion, small	-		3	C	
46	Bowl, lotion, medium	-		3	C	
47	Bowl, lotion, large	-		3	C	
30	Drip stand	-		3	A	
2. Casualty						
1	Wheelchair	-		2	A	
2	Stretcher (Trolley)	-		2	A	
48	Hospital bed, hospital model, two-sectioned, with mattress	-		3	A	
49	Hospital bed bednet, treated	-		3	C	
50	Hospital bed cradle	-		1	A	

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
51	Bed-side screen	-		2	B	
52	Bed-side cabinet, hospital model	-		3	C	
53	Over-bed table	-		1	A	
54	Bed pan	-		1	A	
55	Urinal, male	-		1	A	
56	Sputum mug	-		1	C	
57	Drip stand	-		3	A	
58	Oxygen concentrator	-		2	A	
59	Suction pump, foot operated	-		1	C	
60	Suction pump, electric	-		1	A	
Add	Ambu Bag for Adults	-		1	A	
Add	Ambu Bag for Children	-		1	A	
Add	Diagnostic set	-		2	A	
Add	X-Ray film viewing box (negatoscope)	-		1	A	
3. All wards, except maternity ward						
3.1. Nursing stations						
61	Cupboard, lockable	-		1	C	
62	Desk	-		1	C	
63	Chair	-		4	C	
64	Equipment Cabinet	3		1	C	
65	Wastebin with lid	-		1	C	
3.2. Wards						
66	Hospital bed, hospital model, two-sectioned, with mattress	-		5	C	
67	Hospital bed bednet, treated	-		5	C	
68	Infant cot	-		2	C	
69	Infant cot bednet, treated	-		2	C	
70	Hospital bed back rest	-		1	B	
71	Hospital bed cradle	-		1	C	
72	Hospital bed elevator	-		1	B	
73	Traction frame	-		1	C	
74	Bed-side screen	-		1	B	
75	Bed-side cabinet, hospital model	-		5	C	
76	Over-bed table	-		5	C	
77	Bed pan	-		1	A	
78	Urinal, male	-		1	A	
79	Sputum mug	-		1	C	
80	Thermometer, digital	-		2	A	
81	Thermometer jar	-		2	C	
82	Weighing scale, adult	1		1	A	Out of order
83	Salter scale	-		1	C	
84	Weighing trousers	-		1	C	
85	Stethoscope, binaural	-		2	A	
86	BP machine, adult	-		2	A	
87	BP machine, child	-		1	A	
88	Diagnostic set (otoscope and ophthalmoscope)	-		2	C	
89	Glucometer	-		1	A	
90	Rapid Diagnostic Test kits for malaria	-		1	C	
91	Trolley, medicine	-		1	A	
92	Autoclave, electric, small	-		1	C	Refer to 5.3 Sterilization equipment
93	Sterilizing drum, small	-		1	C	Refer to 5.3 Sterilization equipment
94	Timer, 60 min	-		1	C	
95	Indicator, TST control spot	-		1	C	
96	Instrument tray, medium	-		1	C	
97	Instrument tray, large	-		1	C	
98	Dressing tray, medium	-		2	A	
99	Dressing trolley	-		2	A	
100	Dressing set	-		2	A	
101	Bowl, lotion, small	-		2	C	
102	Bowl, lotion, medium	-		3	C	
103	Bowl, lotion, large	-		2	C	
104	Drip stand	-		3	A	
105	Oxygen concentrator	1		2	A	

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
106	Oxygen cylinder	-		1	C	
107	Suction pump, foot operated	-		1	C	
108	Suction pump, electric	1		1	A	Old
Add	<i>Pulse oximeter, finger type</i>	-		2	A	
	4. labour ward/maternity					
	<i>4.1 Sister's office</i>					
109	Desk for Consulting staff	-		1	B	
110	Chair for Consulting staff	-		2	B	
111	Chair for patient	-		2	B	
112	Cupboard, lockable	1		1	B	Out of order
113	Wastebin with lid	-		1	B	
	<i>4.2 First stage room</i>					
114	Examination couch, gynecological	-	2	1	C	MDGi
115	Footstool, one-step	-		1	A	
116	Bed-side screen	-	2	1	C	MDGi
117	CTG machine	-	1	1	C	MDGi
118	Examination light	-		1	A	
119	Stethoscope, fetal, Pinard	-		2	A	
120	Fetal heart detector	-	4	0	C	MDGi
121	Vaginal speculum, small	-		2	A	
122	Vaginal speculum, medium	-		4	A	
123	Vaginal speculum, large	-		4	A	
124	RPR rotator	-		1	B	
	<i>4.3 Delivery room</i>					
125	Instrument cabinet	-		1	B	
126	Instrument trolley	-		2	A	
127	Delivery bed	3	5	4	C	MDGi
128	Drip stand	-		4	A	
129	Footstool, one-step	-		4	A	
130	Bed-side screen	-		1	C	
131	Operating stool, revolving	-	2	0	C	MDGi
132	Vaginal delivery/episiotomy set	-	9	0	C	MDGi
133	Kick-about bowl	-		2	B	
134	Manual vacuum aspiration (MVA) kit	-	8	0	C	MDGi
135	Vacuum extractor, manual	-		1	C	
136	Vacuum extractor, electrical	-		1	A	
137	Weighing scale, infant, beam type	-	9	0	C	MDGi
138	Wall clock	-		1	C	
139	Resuscitaire (Infant warmer)	1	1	0	C	MDGi
140	Neonatal incubator	1	1	0	C	MDGi, existing one is out of order
141	Suction pump, electric	1	1	0	C	MDGi, existing one is out of order
142	Suction pump, foot-operated	-		1	C	
Add	<i>Fetal doppler</i>	-	1	1	C	MDGi
Add	<i>BP machine, adult</i>	1		2	A	Old
	<i>4.4 Recovery room</i>					
143	Hospital bed, hospital model, two-sectioned, with mattress	-		2	C	
144	Infant cot with mattress	-		2	C	
145	Bed-side screen	-		1	C	
146	Bed-side cabinet, hospital model	-		2	C	
147	Over-bed table	-		2	C	
148	Bed pan	-		1	C	
149	Drip stand	-		1	C	
	<i>4.5 Postnatal ward</i>					
150	Hospital bed, hospital model, two-sectioned, with mattress	-		10	C	MDGi
151	Bednet, long lasting insecticide treated, for hospital bed	-		10	C	MDGi
152	Infant cot with mattress	-		2	C	MDGi
153	Bednet, long lasting insecticide treated, for hospital cot	-		2	C	MDGi
154	Bed-side screen	-		2	C	MDGi
155	Bed-side cabinet, hospital model	-		10	C	MDGi
156	Over-bed table	-		10	C	MDGi
157	Bed pan	-		1	C	MDGi

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
158	Phototherapy machine	-		1	C	MDGi
159	Oxygen concentrator	-	1	1	C	MDGi
160	Oxygen cylinder	-		4	C	MDGi
	4.6 Maternity ward					
161	Vaginal speculum, small	-		1	A	
162	Vaginal speculum, medium	-		2	A	
163	Vaginal speculum, large	-		2	A	
164	Thermometer, digital	-		2	A	
165	Thermometer jar	-		2	C	
166	Weighing scale, infant, beam type	-		1	A	
167	Stethoscope, binaural	-		4	A	
168	BP machine, adult	-		4	A	
169	Glucometer	-		2	A	
170	Rapid Diagnostic Test kits for malaria	-		1	C	
171	Medicine trolley	-		2	A	
172	Autoclave, electric, medium	1		1	C	Out of order. Refer to 5.3 Sterilization equipment
173	Sterilizing drum, small	-		2	C	
174	Sterilizing drum, medium	-		2	C	
175	Timer, 60 min	-		1	C	
176	Indicator, TST control spot	-		1	C	
177	Instrument tray, medium	-		1	C	
178	Instrument tray, large	-		1	C	
179	Dressing tray, medium	-		2	A	
180	Dressing trolley	-		2	A	
181	Dressing set	-		2	A	
182	Bowl, lotion, small	-		2	C	
183	Bowl, lotion, medium	-		2	C	
184	Bowl, lotion, large	-		2	C	
185	Drip stand	-		8	A	
Add	<i>Hospital bed, hospital model, two-sectioned, with mattress</i>	-		8	B	Quantity will be decided depends on construction plan.
Add	<i>Bed-side cabinet, hospital model</i>	-		8	B	
Add	<i>Infant cot with mattress</i>	-		4	B	
	5. Operating theatre					
	5.1 theatre equipment					
186	Ambu bag for adults (resuscitator)	-		1	A	
187	Ambu bag for children (resuscitator)	-		1	A	
188	Anesthetic machine	3		1	A	2 units are out of order
189	Bowl, lotion, large	-		6	C	
190	BP machine, adult	-		2	A	
191	Bucket, stainless steel with cover	-		4	A	
192	Electro surgical unit	0		1	A	
193	Dangerous drugs, cabinet	-		1	B	
194	Defibrillator	1		1	C	
195	Dressing tray, large	-		3	A	
196	Dressing tray, medium	-		2	A	
197	Dressing tray, small	-		1	A	
198	Dressing trolley	-		1	A	
199	Drip stand	-	3	2	C	MDGi
200	Ear syringe	-		1	C	
201	Footstool, one-step	-		2	A	
202	Instrument cabinet	-		1	B	
203	Instrument tray, large	-		16	C	
204	Instrument trolley	-		2	C	
205	Kick-about bowl	-		6	C	
206	Laryngoscope set	-	2	2	C	MDGi
207	Mayo table	-		2	A	
208	Neonatal resuscitaire	-	4	4	C	MDGi
209	Operating stools, revolving	-		2	A	
210	Operating table	2	1	1	C	MDGi
211	Operating-room light, fixed, ceiling mounted	1		2	A	Out of order
212	Operating-room light, portable, with stand	1		2	A	Out of order
213	Oxygen concentrator	1		2	A	

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
214	Oxygen cylinder	-		8	C	
215	Patient trolley	-		2	A	
216	Pulse oximeter, separate	-		2	A	
217	Recovery bed	-		2	A	
218	Stand, single bowl	-		4	C	
219	Stethoscope, binaural	-		4	A	
220	Suction pump, electric	2		2	C	
221	Ventilator	0		1	C	
222	Vital signs monitor, portable	-		2	A	
223	Wall clock	-		1	C	
224	X-Ray film viewing box (negatoscope)	-		1	A	
Add	Medicine refrigerator	-		1	A	
	5.2 Theatre instrument sets					
225	Set, amputation	-		3	A	
226	Set, bilateral tubal ligation	-		3	A	
227	Set, caesarian section	-		6	A	
228	Set, decapitation	-		3	C	
Add	Set, Hysterectomy	0		1	A	
229	Set, dilatation and curetage Set (D+C set)	-		3	A	
230	Set, general	-		3	C	
231	Set, laparotomy	-		3	A	
232	Set, minor surgery	-		3	A	
	5.3 Sterilization equipment					
233	Autoclave, electric, 400 liters	-		1	A	
234	Bed pan washer	-		1	A	
235	Sterilizing drum, large	-		4	A	
236	Sterilizing drum, medium	-		4	A	
237	Ultrasonic cleaner	-		1	C	
	6. Dental unit					
238	Bench top autoclave	1		1	A	Out of order
239	Dental amalgamator	-		1	C	
240	Dental chair	1		1	A	Old
241	Dental compressor	-		1	A	
242	Dental film processor or developer	-		1	A	
243	Dental instrument cabinet	1		1	A	Old
244	Dental instrument set	-		3	A	
245	Dental Instrument tray	-		2	C	
246	Dental light	-		1	C	
247	Dental light curing unit	-		1	A	
248	Dental treatment trolley	-		1	A	
249	Dental treatment unit	-		1	B	
250	Dental x-ray unit	1		1	A	Out of order
251	Dentist stool	-		1	A	
252	Ultrasonic dental scaler	-		1	A	
Add	Lead apron	-		1	A	
	7. Pharmacy					
253	20 ml medicine cup	-		1	A	
254	Drug cabinet, lockable	-		1	A	
255	Graduated glass measure	-		1	A	
256	Mixer	-		1	A	
257	Mortar and pestle	-		2	A	
258	Pharmacy balance	-		1	A	
259	Pharmacy heavy duty trolley	-		1	A	
260	Pharmacy refrigerator	-		1	A	
261	Tablet and capsule counter	-		1	A	
262	Tablet counting tray	-		1	A	
263	Vaccine refrigerator	2		1	B	Located in MCH
264	Water distiller	-		1	A	
265	Water filter	-		1	C	
	8. Laboratory					
266	Anaerobic jar	-		1	A	
267	Analytical balance	-		1	A	
268	Autoclave for laboratory, medium	-		1	A	
269	Binocular microscope	3		1	A	2 units are old

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No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
270	Blood bank refrigerator	-		1	A	
271	Bunsen burner	-		1	A	
272	CD4 counting machine	1		1	C	
273	Centrifuge, small	1		1	A	Old
274	Chemistry analyzer	2		1	C	
275	Differential counter	-		1	B	
276	Flammable liquid cabinet	-		1	B	
277	Hematology analyzer	1		1	C	
278	Hot air oven	-		1	B	
279	Hot plate, controlled temperature	1		1	B	Old
280	Laboratory incubator, medium	-		1	A	
281	Laboratory refrigerator/freezer	-		2	A	
282	Microhaematocrit centrifuge	1		1	B	Out of order
283	Micropipettes, automated	-		1	A	
284	pH meter	-		1	A	
285	Roller/mixer	-		1	B	
286	RPR rotator	-		1	A	
287	Spirit lamp	-		2	B	
288	Timer	-		2	A	
289	Voltex for CD4 counting	-		1	C	
290	Water bath	1		1	A	Old
291	Water distiller	-		1	A	
	9. Radiology department					
292	Actinic marker	-		1	A	
293	Film processor, automatic	-		1	A	
294	Darkroom safety light holder	-		2	C	
295	Dryer for manual film processor	-		1	C	
296	Electrolyte Silver Recovery Kit	-		1	C	
297	Film hanger (set of five sizes)	-		4	C	
298	HSG kit	-		1	C	
299	Lead apron	-		1	A	
300	Lead gloves	-		1	C	
301	Film processor, manual	-		1	C	
302	Protective lead shield or screen	-		1	C	
303	Quality assurance kit	-		1	C	
304	Ultrasound scanner with printer	-		1	A	
305	X-ray film stationery grid	-		1	B	
306	X-Ray film viewing box (negatoscope)	-		1	A	
307	X-Ray loading bench (Film hopper)	-		1	A	High priority of MOH
308	X-ray unit, fixed	-		1	A	
309	X-ray unit, mobile	-		1	A	High priority of MOH
Add	Portable ultrasound scanner for Gynecology	-		1	A	
	10. Mortuary					
310	20 liter bucket	-		1	C	
311	Autopsy saw	-		1	C	
312	Autopsy set	-		1	C	
313	Autopsy table	-		1	C	
314	Mortuary fridge/unit (4 trays)	-		1	C	
315	Mortuary trolley	-		1	C	
316	Organ table	-		1	C	
317	Spring balance	-		1	C	
	11. Ambulance					
318	Ambulance	-		1	C	
	12. Maintenance					
319	Maintenance Set	-		1	A	
	13. Physiotherapy					
Add	Therapeutic Ultrasound Machine	0		2	A	
Add	Infra-red Irradiation Machine	1		2	A	
Add	Short wave diathermy	0		1	A	
Add	Infra red, Lumber sacral	0		1	A	
Add	Quadriceps Bench	0		1	A	
Add	Treadmill Machine	1		2	A	
Add	Ultraviolet, Limp	0		2	A	
Add	Treatment couch	2		3	A	

CHAWAMA

No.	Items	Existing	MDGi	JICA Quantit y	Priority	Note
Add	Elliptical	2		2	A	
Add	Electrical Cervical/Lumber traction	0		2	A	
Add	Gathre Smith suspension	0		1	B	
Add	Stationary bike	2		2	A	
Add	Wave therapy	0		1	A	Paraffin



JAPANESE GRANT

The Japanese Grant (hereinafter referred to as the "Grant") is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.

Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

1. Grant Procedures

The Grant is supplied through following procedures :

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.



- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japanese Grant Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country



Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)



The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010) .

(11) Monitoring

The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

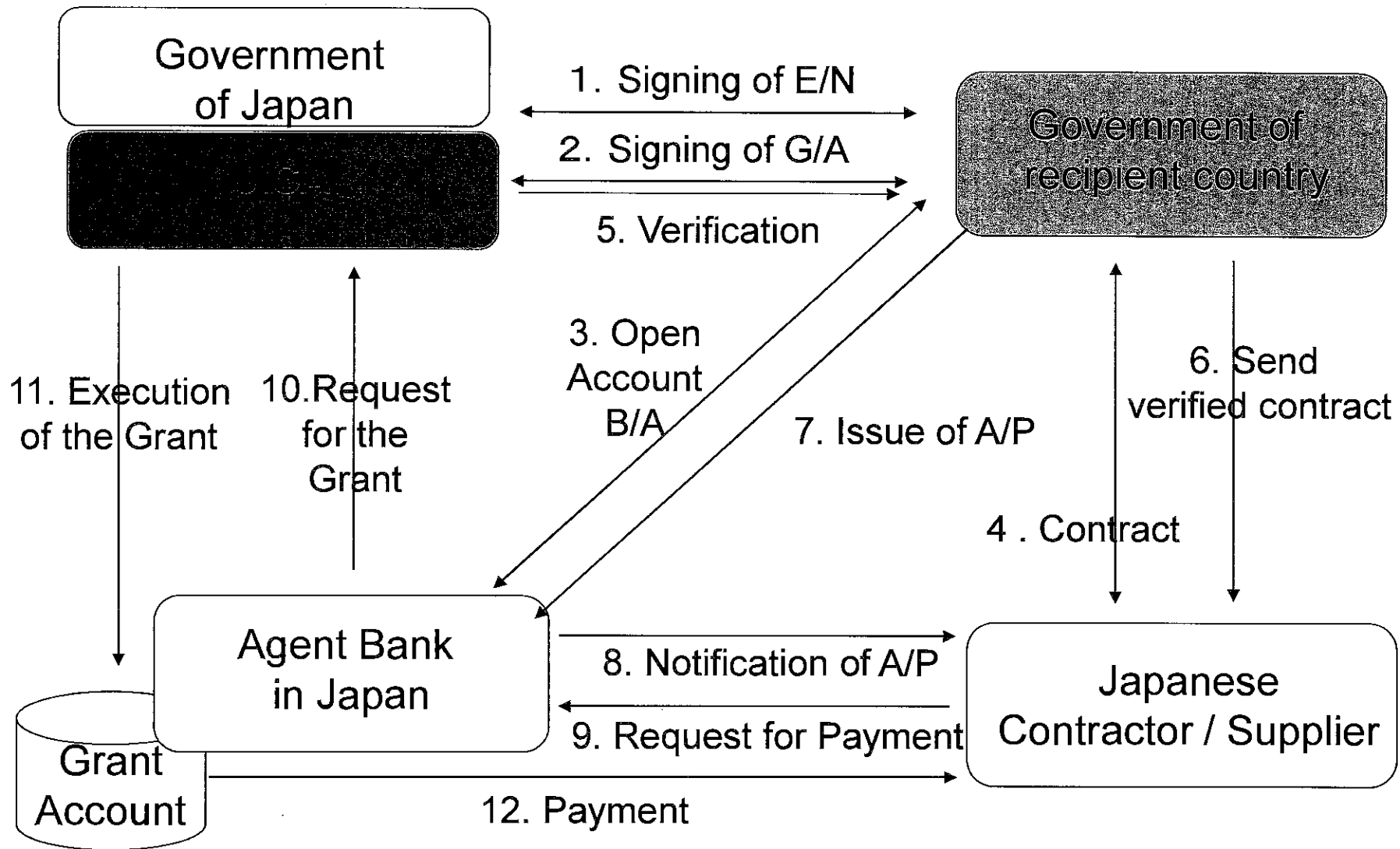


FLOW CHART OF JAPANESE GRANT PROCEDURES

Stage	Flow & Works	Recipient Government	Japanese Government	JICA	Consultant	Contract	Others
Application							
Project Formulation & Preparation							
Appraisal & Approval							
Implementation	<p>(E/N: Exchange of Notes) (G/A: Grant Agreement) (A/P: Authorization to Pay)</p>						
Evaluation & Follow up							

Amc

Financial Flow of Grant Aid (A/P Type)



Major Undertakings to be taken by Each Government

1. Major Undertakings to be taken by Recipient Government

1-1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	Within 1 month after G/A	MOF		
2	To implement Environmental Impact Assessment (EIA)	Before start of the construction	MOH		
3	To secure the following lands (Chipata, Kanyama, Chawama) <ol style="list-style-type: none"> 1) Project sites 2) Construction vehicles routes 3) Temporary construction yard and stock yard near the Project area 	Before notice of the tender document	MOH		
4	To clear and level and reclaim the following sites <ol style="list-style-type: none"> 1) Existing facilities <p>Chipata: Male circumcision, TB and ultrasound building (except for X-ray), TB shelter, chlorine building, container, trees, part of boundary wall, some walls and underground foundations</p> <p>Kanyama: 4 staff houses, medicine storage, septic tank, trees, part of boundary wall, fences for staff houses</p> <p>Chawama: Post office, ATM, play ground seats, medicine storage, generator, guard house, mortuary, Incinerator, some underground foundations, trees, some parts of boundary wall, community well</p> <p>Note that necessary measures to prevent negative environmental and human influence caused by asbestos which is likely contained in structural components of 4 staff houses in Kanyama project site must be taken place when the houses are demolished.</p> 2) Remove utilities (Chipata, Kanyama, Chawama) <p>Existing electrical power cable, telephone line, water pipe, sewer line crossing the project sites</p> 	Before signing of construction contract	MOH		
5	To construct the following facilities <p>Chipata : Gate and guard house</p> <p>Chawama : Gate, guard house and walls facing to main road</p>	Before signing of construction contract	MOH		
6	To obtain the planning, zoning, building permit	Before notice of the tender document	MOH		
7	To submit the result of DD	End of DD	MOH		




1-2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	Within 1 month after the signing of the contract	MOH		
	2) Payment commission for A/P	Every payment	MOF		
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	During the Project	MOH (Procurement)		
	2) Internal transportation from the port of disembarkation to the project site	During the Project	Contractor		
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	During the Project	MOH		
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	During the Project	MOH		
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	During the Project	MOH		
6	To submit Project Monitoring Report.	Every month	MOH		MD
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities (Chipata, Kanyama, Chawama)				
	1) Electricity - Power supply to new substation and metering devices for the Project	6 months before completion of the construction	MOH		
	2) Water Supply - Water supply to the project site and meter installation	6 months before completion of the construction	MOH		
	3) Drainage - Connection work of on-site storm water drainage to existing off-site storm water open ditches	6 months before completion of the construction	MOH		
	4) Telephone System - Telephone cabling - Provide telephone main trunk line to the main distribution frame/panel (MDF)	6 months before completion of the construction	MOH		

4/4

Amc

1-3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection 4) Allocation of sufficient staff appropriately	After completion of the construction	MOH		
2	To provide General furniture, Linen and curtain	After completion of the construction	MOH		
3	To move to new facilities	After completion of the construction	MOH		
4	To construct Exterior Work (planting, etc.)	After completion of the construction	MOH		

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)




2. Major Undertakings to be covered by the Japanese Grant

NO	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct the facilities (Improvement of hospitals)			
	1) To ensure prompt unloading and customs clearance in recipient country			
	a) Tax exemption and customs clearance of the products Marine(Air)			
	b) Internal transportation to the project site			
	2) To construct access roads and storm drainage ditch and exterior works			
	a) Within the project site			
	3) To construct the temporary building for construction			
	4) To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
	a) Electricity			
	- The drop wiring and internal wiring within the project site			
	- The main circuit breaker and transformer			
	- Piping to the main circuit breaker from site boundary, including manholes and handholes			
	- Branch breaker and piping system to existing main distribution panel within the project site			
	b) Water Supply			
	- Provide on-site facilities with tank, elevated water tower, water reservoir, water supply to new buildings			
	- Provide water supply capacity and piping to existing facilities within the project site			
	c) Drainage			
	- The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the project site			
	d) Telephone System			
	- Provide wiring on-site and for new buildings			
	- Provide on-site piping and hand hole			
	e) Medical Furniture and Equipment			
	- Curtain rails and medical curtains			
	- Medical furniture and fixed furniture			
	- Supply and installation of medical equipment			
2	To implement detailed design, tender support and construction supervision (Consultant)			
3	Contingencies			
	Total			

*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
20XX, Month

Organization Information

1) Authority (Signer of the G/A)	_____ Person in Charge _____ (Division) _____ Contacts Address: _____ _____ Phone/FAX: _____ _____ Email: _____
Executing Agency	_____ Person in Charge _____ (Division) _____ Contacts Address: _____ _____ Phone/FAX: _____ _____ Email: _____
Line Agency	_____ Person in Charge _____ (Division) _____ Contacts Address: _____ _____ Phone/FAX: _____ _____ Email: _____

Outline of Grant Agreement:

Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____
Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:

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and

1: Project Description

1-1 Project Objective

--

1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

--

1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)		
Indicators	Original (Yr)	Target (Yr)
Qualitative Effect		

2: Project Implementation

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	Original: (M/D) Attachment(s):Map	Actual: (PMR) Attachment(s):Map
-----------------	---	---

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
(M/D)	(M/D)	(PMR)

(Handwritten signature)

(Handwritten signature)

'Soft component' shall be included in 'Items'.	Please state not only the most updated schedule but also other past revisions chronologically.
--	--

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

2-2 Implementation Schedule

2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
<i>[M/D]</i> 'Soft component' shall be stated in the column of 'Items'. Project Completion Date*	<i>(M/D)</i>	(PMR) As of (Date of Revision)	Please state not only the most updated schedule but also other past revisions chronologically.

*Project Completion was defined as _____ at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

2-3 Undertakings by each Government

2-3-1 Major Undertakings

See Attachment 2.

2-3-2 Activities

See Attachment 3.

2-3-3 Report on RD

See Attachment 4.



Due

2-4 Project Cost
2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan

(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities (or Equipment)	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Consulting Services	- Detailed design - Procurement Management - Construction Supervision			
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of XX

Items	Cost (Million USD)
-------	-----------------------

2-6 Environmental and Social Impacts

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

3: Operation and Maintenance (O&M)

3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: (M/D)

Actual: (PMR)

3-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: (M/D)

4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): (M/D)



Potential Project Risks	Assessment
1.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
2.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
3.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s)	
(PMR)	

Dul

5: Evaluation at Project Completion and Monitoring Plan

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan for the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Final Report Only)



Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st month, 2015 ●	2nd month, 2015 ●	3rd month, 2015 ●	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

-
-
-

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)

(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	




MINUTES OF DISCUSSIONS
ON ADDITIONAL PREPARATORY SURVEY
ON THE PROJECT FOR UPGRADING OF LUSAKA HEALTH CENTRES TO
DISTRICT HOSPITALS PHASE 2

After the completion of the Preparatory Survey on the Project for Upgrading of Lusaka Health Centers to District Hospitals Phase 2 (hereinafter referred to as "the Project") in February to March 2016, Japan International Cooperation Agency (hereinafter referred to as "JICA") has conducted a series of internal works. During the work process, JICA found some important issues which required dispatch of the Additional Survey Team to the Republic of Zambia (hereinafter referred to as "Zambia").

JICA sent the Additional Team for Further Discussion (hereinafter referred to as "the Team") to Zambia, headed by Dr. Hiroshi Takenaka, Senior Advisor in Health, Human Development Department JICA, and was scheduled to stay in the country from 5th to 10th June, 2016.

The Team held a series of discussions with the officials concerned from the Government of Zambia. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works.

Lusaka, 10th June, 2016



Dr. Hiroshi Takenaka
Leader
Preparatory Survey Team
Japan International Cooperation Agency



Dr. Peter Mwaba
Permanent Secretary
Ministry of Health
The Republic of Zambia

ATTACHMENT

1. Revision of construction area of Chawama site

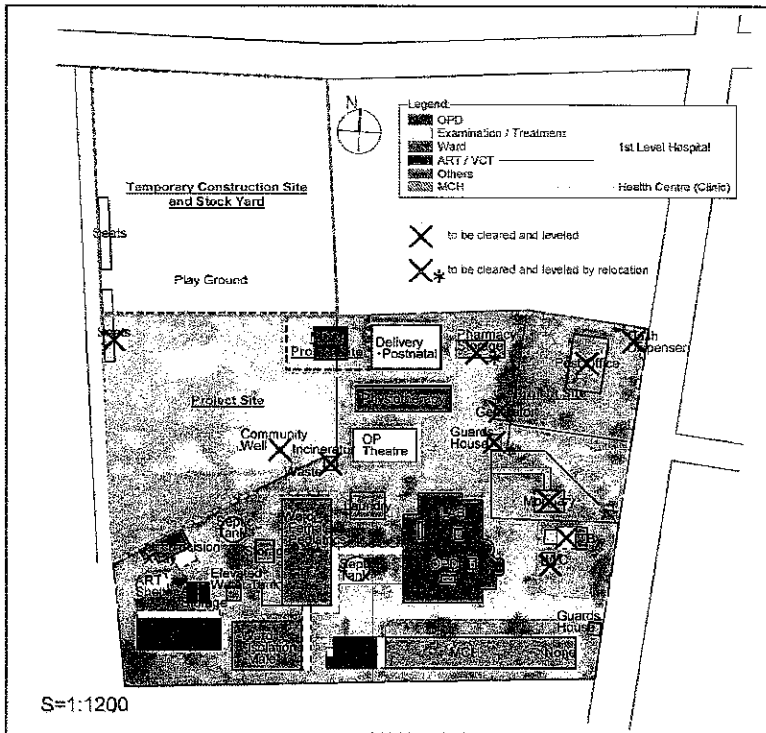
Due to the difficulty in securing land (playground) for construction, JICA has proposed a revised construction area, which includes all the components previously agreed. Zambia agreed with new idea which is shown in Annex-1.

2. Maintenance service of Medical Equipment

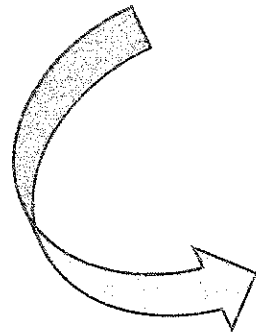
During the previous survey period, both sides had agreed that the project will provide maintenance service for general X-ray unit, Ultrasound scanner and Anesthetic machine for three years. Internal survey by JICA has revealed that provision of two year on-call based maintenance service after one-year warranty period will be difficult in current circumstance. Zambia accepted that the project will at least provide maintenance service for medical equipment mentioned above for one-year including warranty. JICA will continue to study any possibility to cover additional maintenance service for medical equipment mentioned above.

Annex-1 Location Map of Project Site; Chawama





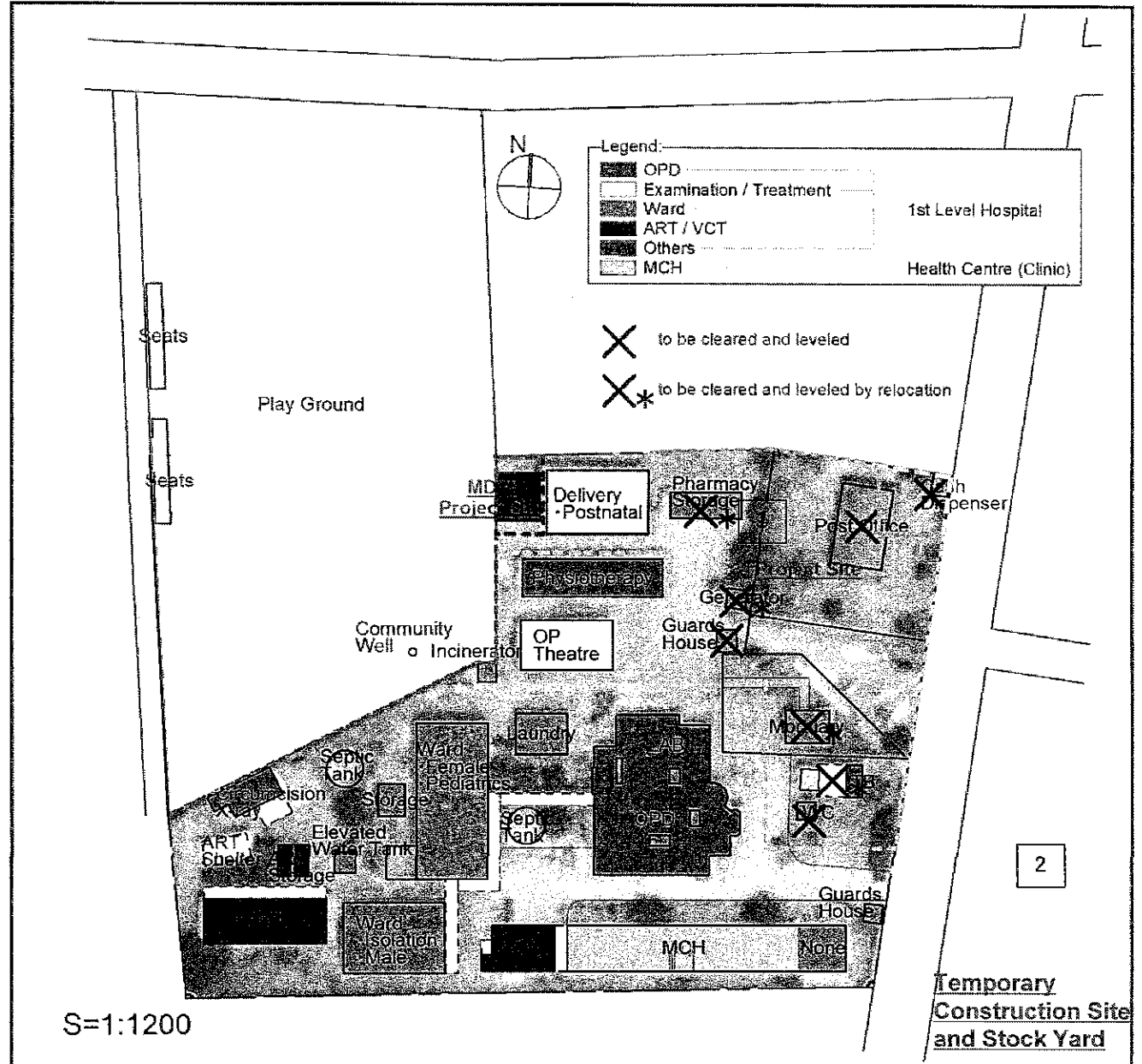
• As Minutes signed on 3rd March, 2016



★Further confirmation

1. Expansion for new buildings is limited to Post Office area. Post Office will move out with cash dispensary in August 2016.
2. Use of some part of market place in front of main gate as temporary stockyard for construction.

py

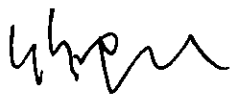


Minutes of Discussions
on the Preparatory Survey for the Project for
Upgrading of Lusaka Health Centres to Level 1 Hospitals
(Explanation on Draft Preparatory Survey Report)

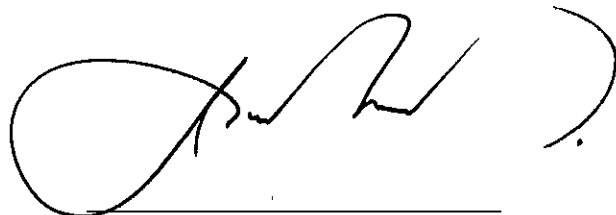
With reference to the minutes of discussions signed between Ministry of Health, the Republic of Zambia (hereinafter referred to as "MOH") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on 3rd March, 2016 and in response to the request from the Government of the Republic of Zambia (hereinafter referred to as "Zambia") dated 16th July, 2014, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the explanation of Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for Upgrading of Lusaka Health Centres to Level 1 Hospitals Phase 2 (hereinafter referred to as "the Project"), headed by Dr. Hiroshi TAKENAKA, Senior Advisor in Health, Human Development Department, JICA from 30th November to 8th December, 2016.

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Lusaka, 8th December, 2016



Dr. Hiroshi Takenaka
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Dr. Jabbin L. Mulwanda
Permanent Secretary (Technical Services)
Ministry of Health
The Republic of Zambia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the health service delivery in Lusaka District through upgrading of three (3) Urban Health Centres in Lusaka District to Level 1 hospitals, thereby contributing to improvement of health status of the people in Lusaka District.

2. Title of the Preparatory Survey

Both sides confirmed change of the title of the Preparatory Survey to “the Preparatory Survey for the Project for Upgrading of Lusaka Health Centres to Level 1 Hospitals Phase 2” from “the Preparatory Survey for the Project for Upgrading of Lusaka Health Centres to District Hospitals Phase 2”.

3. Project sites

Both sides confirmed that the sites of the Project are in Lusaka District, which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed that the MOH will be the executing agency for the Project (hereinafter referred to as “the Executing Agency”). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be taken care by relevant authorities properly and on time. The organization chart is shown in Annex 2.

5. Contents of the Draft Report

After the explanation of the contents of the Draft Report by the Team, the Zambian side agreed to its contents. The facility components which are included in the Project are shown in Annex 3 and the equipment list in each project site is shown in Annex 4. The Zambian side agreed to funds limitation and grant aid restriction explained by the Team.

6. Cost estimate

Both sides confirmed that the cost estimate including the contingency described in the Draft Report is provisional and will be examined further by the Government of



Japan for its approval. The contingency would cover the additional cost against natural disaster, unexpected natural conditions, etc.

7. Confidentiality of the cost estimate and technical specifications

Both sides confirmed that the cost estimate and technical specifications in the Draft Report should never be duplicated or disclosed to any third parties until all the contracts under the Project are concluded.

8. Timeline for the Project implementation

The Team explained to the Zambian side that the expected timeline for the Project implementation is as attached in Annex 5.

9. Expected outcomes and indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Zambian side will be responsible for the achievement of agreed key indicators targeted in year 2022 and shall monitor the progress based on those indicators. The following indicators to measure quantitative effect and the qualitative effect are proposed.

[Quantitative indicators]

Indicator	Facility	Unit	Standard Value		Objective Value (2022) (three years after completion of construction)
			Year of Standard Value	Value	
Number of Outpatients*1	Chipata	person/year	Average between 2013-2015	191,156	239,136
	Kanyama	person/year	Average between 2014-2015	232,553	290,924
	Chawama	person/year	Average between 2013-2015	190,506	238,323
Number of Caesarean section*2	Chipata	case/year	2015	161	580
	Kanyama	case/year	2015	0	746
	Chawama	case/year	2015	0	518
Number of surgeries (excluding caesarean section)*3	Chipata	case/year	2015	655	903
	Kanyama	case/year	2015	0	1,147
	Chawama	case/year	2015	0	795

*1: At the time of the 2016 survey will be the reference year, and the population growth rate 3.8% for the Lusaka District will be applied (Central Statistics Office, 2013). In comparison, the number of outpatients in 2022 is expected to increase by 25.1%.

*2: It is assumed that 10% of total delivery will be by caesarean section, and 90% of them can be conducted at the level 1 hospitals. It is assumed that the average of the total delivery at each facility from 2011 to 2015 will increase by 25.1% by 2022. The target value will be set at 80% of the assumption because the availability of service will depend on the allocation of medical personnel in 2022.

*3: The number of the basic surgeries in University Teaching Hospital will be increased by 25.1% in 2022 compared to what of average number of 2011 to 2015. We assume that 50 % of these cases should be conducted in level 1 hospitals. The number of cases is calculated based on the distribution of the origin of the referred patients. These numbers also take into account the risk of insufficient allocation of medical personnel.

[Qualitative indicators]

- (1) Improvement in the Quality of Health Services
- (2) The Provision of the Functional and Efficient Health Services
- (3) Indicators of the Work Environment and Satisfaction Survey from Patients
- (4) Strengthening of the Referral System in the Lusaka District

10. Technical assistance (“Soft Component” of the Project)

Considering the sustainable operation and maintenance of the products and services granted through the Project, following technical assistance is planned under the Project. The Zambian side confirmed to deploy necessary number of counterparts who are appropriate and competent in terms of its purpose of the technical assistance as described in the Draft Report.

11. Undertakings of the Project

11-1. General Issues

Both sides confirmed the undertakings of the Project as described in Annex 6. Both sides also confirmed that the Annex 6 will be used as an attachment of G/A.

11-2. Tax exemption

With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in 1. (2) 1) No. 24 of Annex 6, both sides confirmed that such customs duties, internal taxes and other fiscal levies include VAT, commercial tax, income tax and corporate tax, which shall be clarified in the bid documents by MOH during the implementation stage of the Project.

The Zambian side also confirmed that registration of the Project related Japanese contractors and consultants with the National Council of the Construction or other relevant agencies shall be exempted as stipulated in 1. (2) 1) No. 26 of Annex 6.

11-3. Budget allocation

The Zambian side assured to take the necessary measures and coordination including allocation of the necessary budget which is preconditions of implementation of the Project. This budget includes the cost of utility supply works, procurement of general furniture and non-medical equipment among others. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated by the Zambian side.



12. Monitoring during the implementation

The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex 7. The timing of submission of the PMR is described in Annex 6.

13. Project completion

Both sides confirmed that the Project completes when all the facilities constructed and equipment procured by the grant are in operation. The completion of the Project will be reported to JICA promptly, but in any event not later than six months after completion of the Project.

14. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability). The result of the evaluation will be publicized. The Zambian side is required to provide necessary support for the data collection.

15. Schedule of the Study

JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Zambian side around February 2017.

16. Environmental and Social Considerations

The Team explained that 'JICA Guidelines for Environmental and Social Considerations (April 2010)' (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as C because the Project is likely to have minimal adverse impact on the environment under the Guidelines.

17. Other Relevant Issues

17-1. Disclosure of Information

Both sides confirmed that the Preparatory Survey Report from which project cost is excluded will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.



17-2. Staff and Budget Allocation

The Zambian side agreed to ensure sufficient staff for the operation and maintenance of the facilities and medical equipment provided, especially who is in charge of activities in operation theater. The staff recruitment should be basically carried out according to the standard establishment as per Annex 8 and the timeline of staff recruitment procedure as per Annex 9. Regarding to the budget for operation and maintenance of the facilities and medical equipment provided, the Zambian side agreed to secure the budget which are shown in Annex 10.

17-3. Approval for Use of Land

Both sides confirmed that MOH had already obtained the approval from Ministry of Transport and Communication to relocate the post office following the construction of the new structure for the expansion of Chawama Level 1 Hospital. Regarding the stock yard for the construction, the Zambian side shall be fully responsible.

17-4 Maintenance Service of Medical Equipment

The Zambian Side confirmed that the 1-year maintenance contract for general X-ray, mobile X-ray, ultrasound scanner, portable ultrasound scanner for obstetrics and anaesthesia machine is added after 1-year warranty period by manufacturers.

As for X-ray tube, it shall be replaced on no charge basis at the termination of maintenance supplementary contract (2 years after completion of installation of equipment) as it is easily broken and expensive. Other spare parts fee is not included in the maintenance contract.

17-5 Necessary Renovations to the Level 1 Hospital after construction of new hospital buildings

Both sides confirmed that Zambian side will take necessary measures to renovate existing buildings as shown in Annex 11 to improve the service delivery of Level 1 Hospitals.

Annex 1 Project Site [CHIPATA], [KANYAMA], [CHAWAMA]

Annex 2 Organization Chart

Annex 3 Outline of the Facility

Annex 4 Equipment List

Annex 5 Project Implementation Schedule



Annex 6 Major Undertakings to be taken by each Government

Annex 7 Project Monitoring Report (template)

Annex 8 Standard Establishment for Level 1 Hospital

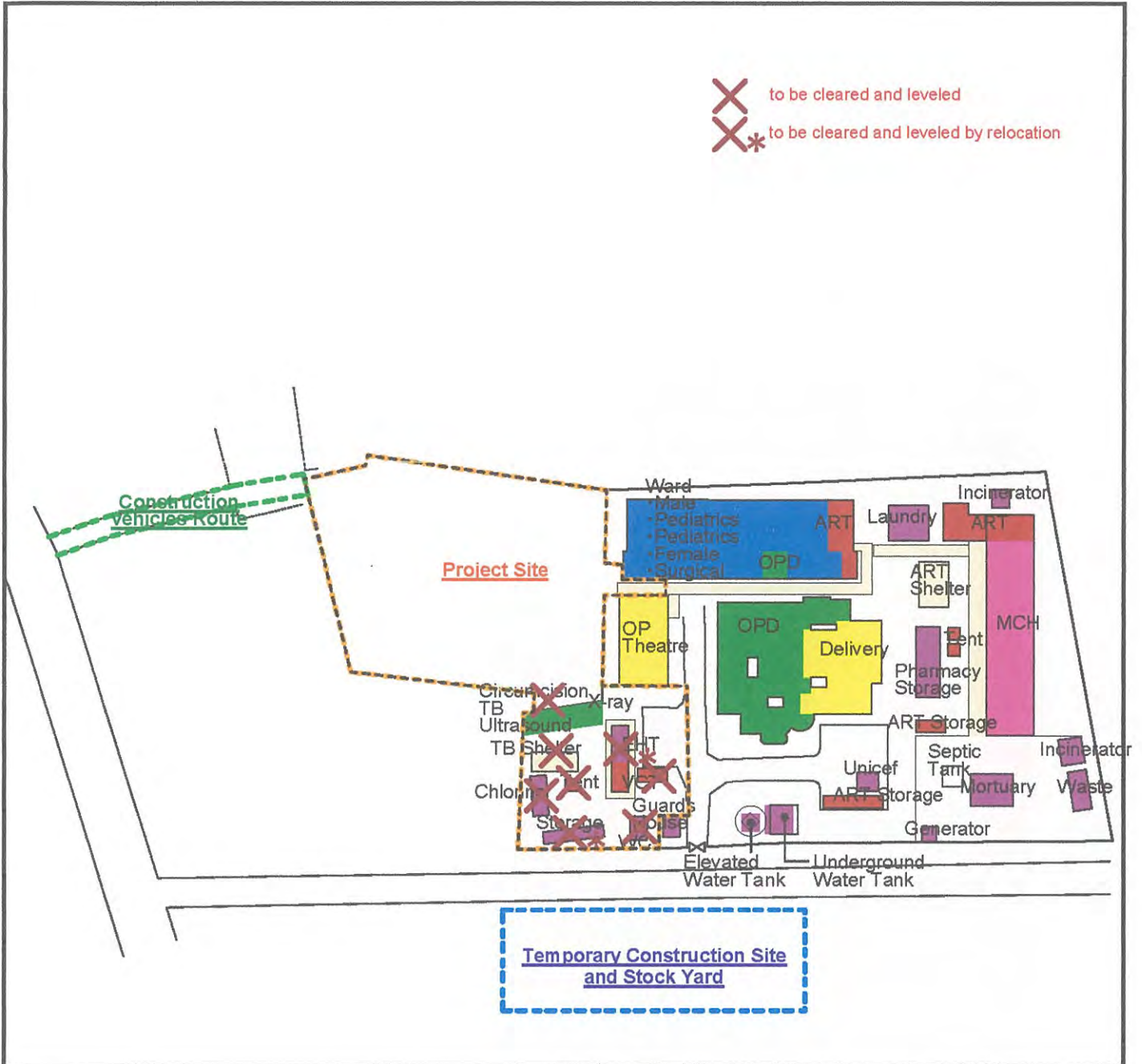
Annex 9 Timeline of Staff recruitment Procedure for the Target Hospitals

Annex 10 Estimated Maintenance Cost

Annex 11 Necessary Renovations to the Level 1 Hospital after construction of new hospital buildings

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Project Site [CHIPATA]



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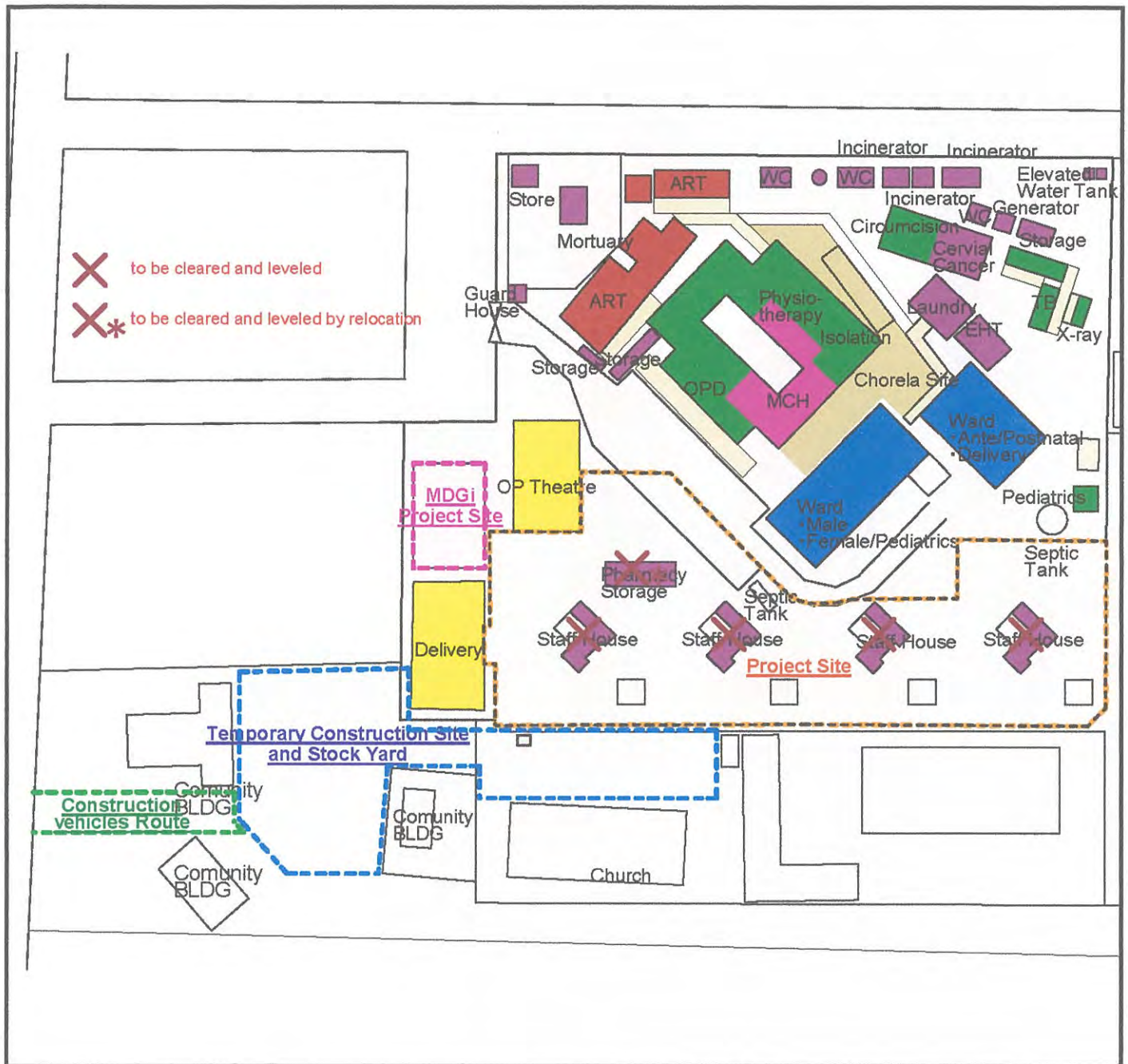


Legend:	
	OPD
	Examination / Treatment
	Ward
	ART / VCT
	Others
	MCH
	— 1st Level Hospital
	— Health Centre (Clinic)

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JLM

Project Site [KANYAMA]



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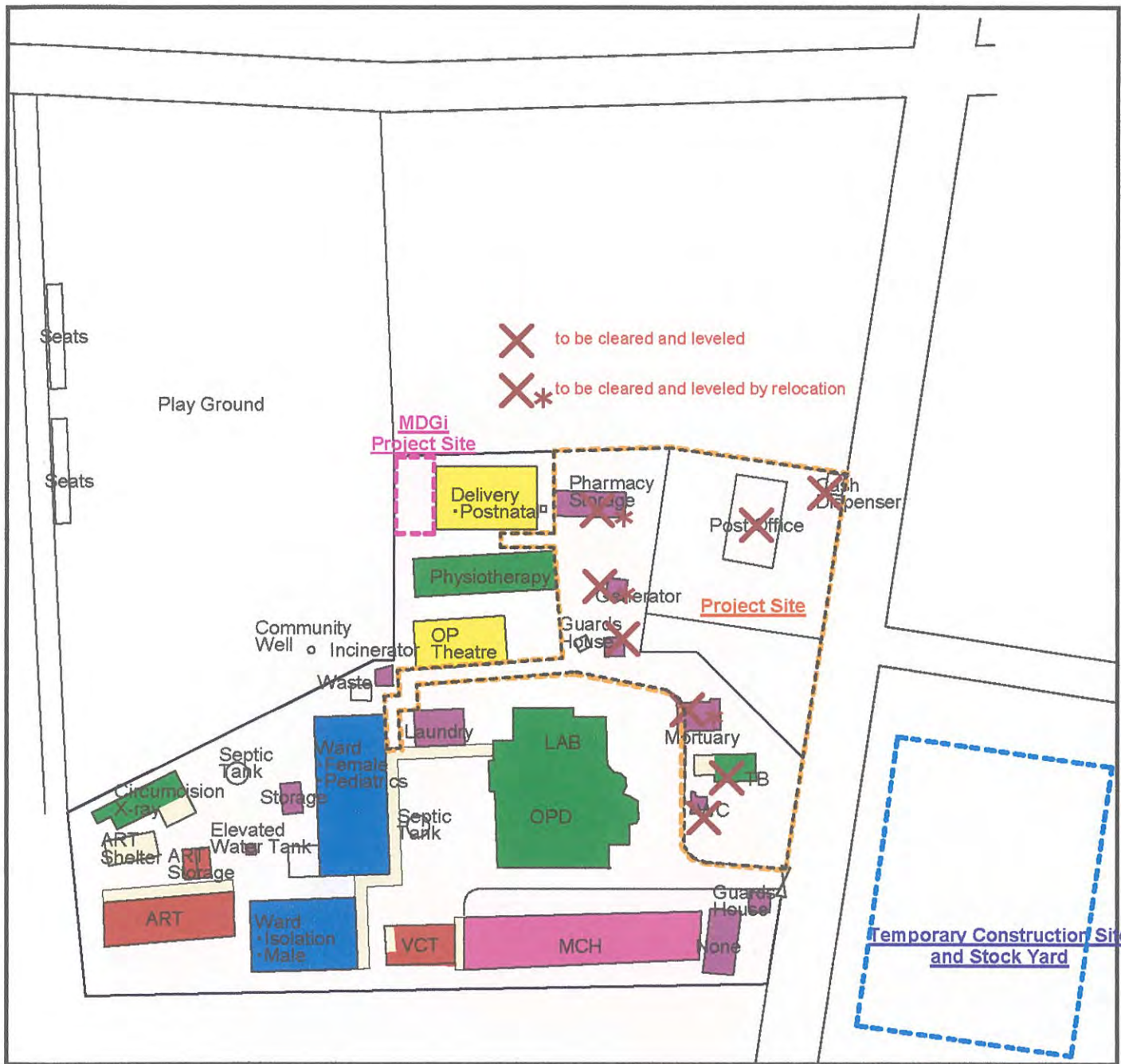


Legend:	
■	OPD
■	Examination / Treatment
■	Ward
■	ART / VCT
■	Others
■	MCH
----- 1st Level Hospital	
----- Health Centre (Clinic)	

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Project Site [CHAWAMA]



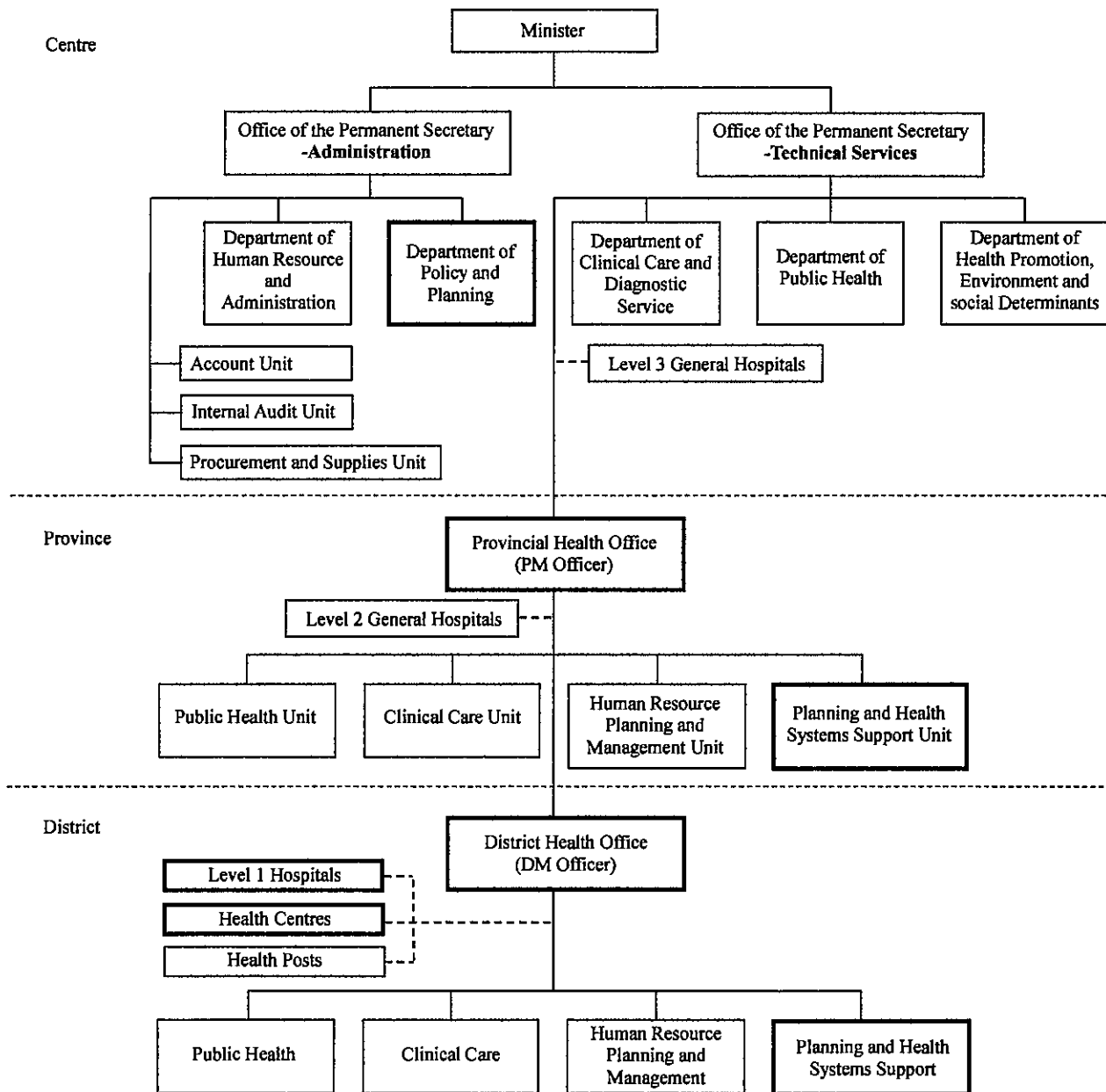
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Organization Chart



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July

Outline of the Facilities

The cooperation project will construct Chipata, Kanyama and Chawama Level 1 Hospitals as below.

(1) Outline of the Cooperation Project for Chipata Level 1 Hospital

Project Outline		Detailed Description
OPD/Theatre (2 Stories)	GFL	OPD : General Outpatient, Eye/ENT, Treatment, TB Medical Imaging : X-ray, Ultrasonography
	1FL	Theatre : Theatre, Sluice Room, Sterilisation Room Ward : Ward (Surgery/ Caesarean section) , Treatment Room, Doctor's Room
OPD/Maternity (2 Stories)	GFL	OPD : Paediatric, Dental, Pharmacy, Dispenser, Cashier
	1FL	Maternity : Delivery, Post-natal, Pre-natal Room, Doctor's Room
Mechanical Unit (Single Story)		Generator Room, Main Switch Room, Distribution Board Pump Room, Water Reservoir
Slope		
Related Facilities (Single Story)		Septic Tank, Blower Room, Elevated Water Tank, Exterior Corridor

(2) Outline of the Cooperation Project for Kanyama Level 1 Hospital

Project Outline		Detailed Description
Theatre/Laboratory (2 Stories)	GFL	Theatre : Theatre, Sluice Room, Sterilisation Room Maternity : Pre-natal Room, Dr. Room
	1FL	OPD : Paediatric, TB Medical Imaging : X-ray, Ultrasonography Clinical Laboratory : Laboratory, Sluice Room, Sterilisation Room, Sample Collection Room
OPD/Ward (2 Stories)	GFL	Ward : Ward (Surgery/ Caesarean section/ Medical) , Treatment Room, Dr. Room
	1FL	OPD : General Outpatient, Eye/ENT, Dental, Treatment Room, Dispenser, Cashier, Slope
Mechanical Unit (Single Story)		Generator Room, Main Switch Room, Main Distribution, Board Pump Room, Water Reservoir
Related Facilities (Single Story)		Septic Tank, Blower Room, Elevated Water Tank, Roofed Corridor

(3) Outline of the Cooperation Project for Chawama Level 1 Hospital

Project Outline		Detailed Description
OPD/Theatre (2 Stories)	GFL	Theatre : Theatre, Sluice Room, Sterilisation Room Ward : Ward (Surgery/ Caesarean section) , Treatment Room, Dr. Room
	1FL	OPD : General Outpatient, Eye/ENT, dental, Treatment, Dispenser, Cashier
OPD/Physiotherapy (2 Stories)	GFL	OPD : TB Physiotherapy : Physiotherapy Room
	1FL	OPD : Paediatric Medical Imaging : X-ray, Ultrasonography
Mechanical Unit (Single Story)		Generator Room, Main Switch Room, Main Distribution, Board Pump Room, Water Reservoir
Slope		
Related Facilities (Single Story)		Septic Tank, Blower Room, Elevated Water Tank, Roofed Corridor

List of Equipment

Chipata level 1 hospital

Name of Equipment	Q'ty
New Facility	
1. General Outpatient Dept.	
Wheelchair	2
Stretcher	2
Examination room-2 (Ophthalmology/Otorhinology)	
Diagnostic set (otoscope and ophthalmoscope)	1
Examination Desk set	1
Equipment Cabinet	1
A Wastebin with lid	1
Bed-side screen	1
Examination room-3 (Gynecology)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Examination couch, gynecological	1
Bed-side screen	1
Examination light	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
Vaginal speculum, small	2
Vaginal speculum, medium	3
Vaginal speculum, large	3
X-ray film viewer	1
Examination room-4	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-5	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1

Name of Equipment	Q'ty
BP machine, adult	1
X-ray film viewer	1
Examination room-6	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-7 (Vital)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Weighing scale, adult	2
Chart, vision-testing, Snellen type	1
Patella hammer	1
Suction pump, electric	1
Ambu bag for adults	1
Ambu bag for children	1
Dressing trolley	3
Pulse oximeter, finger type	2
Treatment room	
Drainage set	3
Dressing set	3
Suturing set	6
Instrument tray, medium	3
Drip stand	2
Treatment table	2
2. Diagnostic Imaging Dept.	
Ultrasonic testing room	
Ultrasonic diagnostic device	1
Treatment table	1
Radioactive testing room	
Actinic marker	1
Film processor, automatic	1
Lead apron	1

Name of Equipment	Q'ty
X-Ray film viewing box (negatoscope)	1
X-Ray loading bench (Film hopper)	1
X-ray unit, fixed	1
Examination room-1 (TB)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
3.Expert outpatient dept.	
Examination room-1 (Pediatrics)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Weighing trousers	1
Salter scale	1
Stethoscope, binaural	1
BP machine, child	1
Ear syringe	1
Examination room-2 (Dentistry)	
Bench top autoclave	1
Dental treatment unit	1
Dental film processor	1
Dental instrument cabinet	1
Dental instrument set	3
Dental light curing unit	1
Dental treatment trolley	1
Dental x-ray unit	1
Ultrasonic dental scaler	1
Lead apron	1
Pharmacy	
20 ml medicine cup	1
Drug cabinet, lockable	1
Pharmacy apparatus set	1
Mixer	1
Mortar and pestle	1
Pharmacy balance	1
Pharmacy heavy duty trolley	1

Name of Equipment	Q'ty
Pharmacy refrigerator	1
Tablet and capsule counter	1
Tablet counting tray	1
Vaccine refrigerator	1
Water distiller	1
4. Operation dept.	
Operation room	
Ambu bag for adults	1
Ambu bag for children	1
Anesthetic machine	1
BP machine, adult	2
Bucket, stainless steel with cover	4
Electro surgical unit	1
Drip stand	2
Medical cabinet	1
Footstool, one-step	2
Laryngoscope set	1
Equipment Cabinet	1
Mayo table	2
Operating stools, revolving	2
Operating-room light, fixed, ceiling mounted	2
Operating-room light, portable, with stand	2
Oxygen concentrator	2
Stretcher	2
Recovery bed	2
Stethoscope, fetal, Pinard	1
Vital signs monitor, portable	2
X-Ray film viewing box (negatoscope)	1
Medicine refrigerator	1
Suction pump, electric	2
Set, amputation	3
Set, bilateral tubal ligation	3
Set, caesarian section	6
Set, Hysterectomy	1
Set, dilatation and curetage Set (D+C set)	3
Set, laparotomy	3
Set, minor surgery	3
Sterilization room	
Autoclave, electric, 400 liters	1
Bed pan washer	1
Sterilizing drum, large	4
Sterilizing drum, medium	4
5. Surgical ward (Caesarean)	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Treatment room	

Name of Equipment	Q'ty
Vaginal speculum, small	2
Vaginal speculum, medium	3
Vaginal speculum, large	3
Thermometer, digital	2
Salter scale	1
Weighing trousers	1
BP machine, adult	1
Glucometer	1
Instrument tray, large	1
Dressing tray, medium	1
Dressing trolley	1
Dressing set	2
Treatment table	1
Ward	
Hospital bed, hospital model, two-sectioned, with mattress	8
Bed-side cabinet, hospital model	8
Drip stand	4
Infant cot	3
X-ray equipment (Mobile type)	1
Private room	
Hospital bed, hospital model, two-sectioned, with mattress	1
Bed-side cabinet, hospital model	1
6. Obstetrics dept.	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Treatment room	
Examination couch, gynecological	1
Footstool, one-step	1
Examination light	1
Traube	1
Vaginal speculum, small	2
Vaginal speculum, medium	3
Vaginal speculum, large	3
Ante partum room	
Hospital bed, hospital model, two-sectioned, with mattress	16
Delivery room	
Instrument cabinet	1
Instrument trolley	2
Drip stand	4
Footstool, one-step	4
Operating stool, revolving	4
Vaginal delivery/episiotomy set	5
Kick-about bowl	4
Manual vacuum aspiration (MVA) kit	5
Vacuum extractor, electrical	2
Weighing scale, infant, beam type	1

Name of Equipment	Q'ty
Suction pump, electric	2
BP machine, adult	1
Transport Incubator	1
Ultrasonic diagnostic device(Mobile type)	1
Recovery room	
Hospital bed, hospital model, two-sectioned, with mattress	8
Bed pan	1
5.6 Premature infant room	
Infant warmer	3
Existing Facility	
7. Emergency	
Wheelchair	1
Stretcher,	1
Hospital Bed	3
Hospital bed cradle	1
Bed-side screen	2
Over-bed table	1
Bed pan	1
Excretion care set	1
Drip stand	4
Oxygen concentrator	1
Suction pump, electric	1
Ambu bag for adults	1
Ambu bag for children	1
Diagnostic set	1
X-Ray film viewing box (negatoscope)	1
8. Ward (Except Obstetrics ward)	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Ward	
Hospital bed, hospital model, two-sectioned, with mattress	5
Bed pan	1
Excretion care set	1
Thermometer, digital	2
Weighing scale, adult	1
Stethoscope, binaural	2
BP machine, adult	2
BP machine, child	1
Glucometer	2
Trolley, medicine	1
Dressing tray, medium	1
Dressing trolley	1
Dressing set	3
Drip stand	6
Oxygen concentrator	2
Suction pump, electric	1

Name of Equipment	Q'ty
Pulse oximeter, finger type	2
9. Laboratory Dept.	
Anaerobic jar	1
Analytical balance	1
Autoclave for laboratory, medium	1
Blood bank refrigerator	1
Bunsen burner	1
Differential counter	1
Flammable liquid cabinet	1
Hot air oven	1
Hot plate, controlled temperature	1
Laboratory incubator, medium	1
Laboratory refrigerator/freezer	1
Microhaematocrit centrifuge	1
Micropipettes, automated	1
pH meter	1
Roller/mixer	1
Timer	1
Water bath	1
Water distiller	1
10. Maintenance	
Maintenance Set	1

Note:

1. MOH will prepare back up generator for following equipment.

Blood bank refrigerator, Laboratory refrigerator/freezer in existing Laboratory

2. Engineer of MOH will maintain Bedpan Washer.

Kanyama Level 1 Hospital

Name of Equipment	Q'ty
New Facility	
1. General Outpatient Dept.	
Wheelchair	2
Stretcher	2
Examination room-1 (Vital)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Weighing scale, adult	2
Chart, vision-testing, Snellen type	1
Patella hammer	1
Suction pump, electric	1
Resuscitation bag set	1
Medicine trolley	3
Pulse oximeter, finger type	2
Examination room-2	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-3	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-4	
Examination Desk set	1

Name of Equipment	Q'ty
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-5	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-6 (Gynecology)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Examination couch, gynecological	1
Bed-side screen	1
Examination light	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Vaginal speculum, small	2
Vaginal speculum, medium	3
Vaginal speculum, large	3
Examination room-7 (Ophthalmology/Otorhinology)	
Diagnostic set (otoscope and ophthalmoscope)	1
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Bed-side screen	1
Examination room-8 (Dentistry)	
Bench top autoclave	1
Dental treatment unit	1
Dental film processor or developer	1
Dental instrument cabinet	1
Dental instrument set	3
Dental light curing unit	1

Name of Equipment	Q'ty
Dental treatment trolley	1
Dental x-ray unit	1
Ultrasonic dental scaler	1
Lead apron	1
Treatment room	
Drainage set	3
Dressing set	3
Suturing set	3
Instrument tray, medium	3
Drip stand	2
Treatment table	2
Pharmacy	
20 ml medicine cup	1
Drug cabinet, lockable	1
Graduated glass measure	1
Mixer	1
Mortar and pestle	1
Pharmacy balance	1
Pharmacy heavy duty trolley	1
Pharmacy refrigerator	1
Tablet and capsule counter	1
Tablet counting tray	1
Vaccine refrigerator	1
Water distiller	1
2. Laboratory Dept.	
Anaerobic jar	1
Analytical balance	1
Autoclave for laboratory, medium	1
Binocular microscope	1
Blood bank refrigerator	1
Bunsen burner	1
Centrifuge, small	1
Differential counter	1
Flammable liquid cabinet	1
Hot air oven	1
Hot plate, controlled temperature	1
Laboratory incubator, medium	1
Laboratory refrigerator/freezer	1
Microhaematocrit centrifuge	1
Micropipettes, automated	1
pH meter	1
Roller/mixer	1
Timer	1
Water bath	1
Water distiller	1
Ultrasonic testing room	
Ultrasonic diagnostic device	1

Name of Equipment	Q'ty
Treatment table	1
Radioactive testing room	
Actinic marker	1
Film processor, automatic	1
Lead apron	1
X-Ray film viewing box (negatoscope)	1
X-Ray loading bench (Film hopper)	1
X-ray equipment	1
Examination room-1 (Pediatrics)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, child	1
X-ray film viewer	1
Weighing scale, adult	1
Weighing trousers	1
Ear syringe	1
Resuscitation bag set	1
Examination room-2 (TB)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
3. Operation dept.	
Operatiion room	
Ambu bag for adults (resuscitator)	1
Ambu bag for children (resuscitator)	1
Anesthetic machine	1
BP machine, adult	2
Bucket, stainless steel with cover	4
Electro surgical unit	1
Drip stand	2
Medical cabinet	1
Footstool, one-step	2
Laryngoscope set	1
Equipment Cabinet	1

Name of Equipment	Q'ty
Mayo table	2
Infant warmer	1
Operating stools, revolving	2
Operating-room light, fixed, ceiling mounted	2
Operating-room light, portable, with stand	2
Oxygen concentrator	2
Stretcher	2
Pulse oximeter, separate	2
Recovery bed	2
Stethoscope, binaural	1
Vital signs monitor, portable	2
X-Ray film viewing box (negatoscope)	1
Medicine refrigerator	1
Suction pump, electric	2
Set, amputation	3
Set, bilateral tubal ligation	3
Set, caesarian section	6
Vaginal delivery/episiotomy set	1
Endometrial curettage set	3
Set, laparotomy	3
Set, minor surgery	3
Sterilization room	
Autoclave, electric, 400 liters	1
Bed pan washer	1
Sterilizing drum, large	4
Sterilizing drum, medium	4
4. Obstetrics dept. (Ante partum room)	
Nurse station	
Instrument cabinet	1
Wastebin with lid	1
Ante partum room	
Hospital bed(Adult)	20
5. Surgical ward (Caesarean)	
Nurse station	
Instrument cabinet	1
Wastebin with lid	1
Treatment room	
Vaginal speculum, small	1
Vaginal speculum, medium	2
Vaginal speculum, large	2
Thermometer, digital	2
Thermometer	2
Salter scale	1
Weighing trousers	1
BP machine, adult	1
Glucometer	1
Trolley, medicine	1

Name of Equipment	Q'ty
Dressing tray, medium	1
Dressing trolley	1
Dressing set	2
Treatment table	1
Ward	
Drip stand	6
Hospital bed, hospital model, two-sectioned, with mattress	12
Bed-side cabinet, hospital model	12
Infant cot	4
X-ray equipment (Mobile type)	1
Private room	
Hospital bed, hospital model, two-sectioned, with mattress	1
Bed-side cabinet, hospital model	1
6. Internal medicine ward (Female)	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Ward	
Hospital bed, hospital model, two-sectioned, with mattress	21
Drip stand	10
Private room	
Hospital bed, hospital model, two-sectioned, with mattress	1
Bed-side cabinet, hospital model	1
Treatment room	
Treatment table	1
Thermometer, digital	2
Weighing scale, adult	1
Stethoscope, binaural	2
BP machine, adult	2
Glucometer	2
Drip stand	1
Oxygen concentrator	2
Suction pump, electric	1
Pulse oximeter, finger type	2
Dressing trolley	1
7. Internal medicine ward (Male)	
Nurse station	
Instrument cabinet	1
Wastebin with lid	1
Ward	
Hospital bed, hospital model, two-sectioned, with mattress	21
Excretion care set	1
Drip stand	10
Private room	
Hospital bed, hospital model, two-sectioned, with mattress	1
Bed-side cabinet, hospital model	1
Treatment room	

Name of Equipment	Q'ty
Treatment table	1
Thermometer, digital	2
Weighing scale, adult	1
Stethoscope, binaural	2
BP machine, adult	2
Glucometer	2
Drip stand	1
Oxygen concentrator	2
Suction pump, electric	1
Pulse oximeter, finger type	2
Dressing trolley	1
Existing facility	
8. Emergency	
Wheelchair	1
Stretcher	1
Hospital bed, hospital model, two-sectioned, with mattress	3
Hospital bed bednet, treated	1
Bed-side screen	2
Over-bed table	1
Excretion care set	1
Drip stand	4
Oxygen concentrator	1
Suction pump, electric	1
Ambu Bag for Adults	1
Ambu Bag for Children	1
Diagnostic set	1
X-Ray film viewing box (negatoscope)	1
9. Ward(Pediatrics)	
Infant cot	4
BP machine, child	1
10. Delivery ward	
Examination couch, gynecological	1
Footstool, one-step	1
Examination light	1
Traube	1
Vaginal speculum, small	2
Vaginal speculum, medium	3
Vaginal speculum, large	3
Ultrasonic diagnostic device(Mobile type)	1
11. Maintenance	
Maintenance Set	1

Note:

1. Engineer of MOH will maintain Bedpan Washer.

Chawama Level 1 Hospital

Name of Equipment	Q'ty
New Facility	
1. Outpatient • Operation Ward	
Wheelchair	2
Stretcher	2
Examination room-1 (Dentistry)	
Bench top autoclave	1
Dental treatment unit	1
Dental film processor or developer	1
Dental instrument cabinet	1
Dental instrument set	3
Dental light curing unit	1
Dental treatment trolley	1
Dental x-ray unit	1
Ultrasonic dental scaler	1
Lead apron	1
Examination room-2 (Pediatrics)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Salter scale	1
Weighing trousers	1
Stethoscope, binaural	1
BP machine, child	1
Ear syringe	1
Ambu bag for children (resuscitator)	1
X-ray film viewer	1
Examination room-3 (Vital)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Weighing scale, adult	2
Stethoscope, binaural	1
BP machine, adult	1
Chart, vision-testing, Snellen type	1
Patella hammer	1
Suction pump, electric	1
Ambu bag for adults (resuscitator)	1
Medicine trolley	3

Name of Equipment	Q'ty
Pulse oximeter, (finger type)	2
X-ray film viewer	1
Examination room-4	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-5	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-6	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Examination room-7 (Gynecology)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Examination couch, gynecological	1
Bed-side screen	1
Examination light	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
Vaginal speculum, small	2
Vaginal speculum, medium	3

Name of Equipment	Q'ty
Vaginal speculum, large	3
X-ray film viewer	1
Examination room-8 (Ophthalmology/Otorhinology)	
Diagnostic set for Eye and ENT	1
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Bed-side screen	1
Treatment room	
Drainage set	3
Dressing set	3
Suturing set	3
Instrument tray, medium	3
Drip stand	1
Treatment table	2
Pharmacy	
Drug cabinet, lockable	1
Drug cabinet, lockable	1
Pharmaceutical apparatus set	1
Mixer	1
Mortar and pestle	1
Pharmacy balance	1
Pharmacy heavy duty trolley	1
Pharmacy refrigerator	1
Tablet and capsule counter	1
Tablet counting tray	1
Vaccine refrigerator	1
Water distiller	1
Ultrasonic testing room	
Ultrasonic diagnostic device	1
Treatment table	1
Radioactive testing room	
Actinic marker	1
Film processor, automatic	1
Lead apron	1
X-Ray film viewing box (negatoscope)	1
X-Ray loading bench (Film hopper)	1
X-ray equipment	1
Operation room	
Operation equipment	
Ambu bag for adults (resuscitator)	1
Ambu bag for children (resuscitator)	1
Anesthetic machine	1
BP machine, adult	2
Bucket, stainless steel with cover	4
Electro surgical unit	1
Drip stand	2

Name of Equipment	Q'ty
Dangerous drugs, cabinet	1
Footstool, one-step	2
Laryngoscope set	1
Instrument cabinet	1
Mayo table	2
Operating stools, revolving	2
Operating-room light, fixed, ceiling mounted	2
Operating-room light, portable, with stand	2
Oxygen concentrator	2
Stretcher	2
Pulse oximeter, separate	2
Recovery bed	2
Stethoscope, binaural	1
Vital signs monitor, portable	2
X-Ray film viewing box (negatoscope)	1
Medicine refrigerator	1
Suction pump, electric	2
Set, amputation	3
Set, bilateral tubal ligation	3
Set, caesarian section	6
Set, Hysterectomy	1
Set, dilatation and curetage Set (D+C set)	3
Set, laparotomy	3
Set, minor surgery	3
Sterilization equipment	
Autoclave, electric, 400 liters	1
Bed pan washer	1
Sterilizing drum, large	4
Sterilizing drum, medium	4
Surgical ward/Caesarean	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Treatment room	
Vaginal speculum, small	1
Vaginal speculum, medium	2
Vaginal speculum, large	2
Dressing tray, medium	1
Dressing trolley	1
Dressing set	2
Treatment table	1
Ward	
Thermometer, digital	2
Salter scale	1
Weighing trousers	1
BP machine, adult	1
Glucometer	1

Name of Equipment	Q'ty
Trolley, medicine	1
Drip stand	4
Hospital bed, hospital model, two-sectioned, with mattress	7
Bed-side cabinet, hospital model	7
Infant cot	2
X-ray equipment (Mobile type)	1
Private room	
Hospital bed, hospital model, two-sectioned, with mattress	1
Bed-side cabinet, hospital model	1
2.Expert patient • Physiotherapy ward	
Physiotherapy	
Therapeutic Ultrasound Machine	2
Infra-red Irradiation Machine	2
Short wave diathermy	1
Infra red, Lumber sacral	1
Quadriceps Bench	1
Treadmill Machine	2
Ultraviolet, Limp	2
Treatment couch	3
Elliptical	2
Electrical Cervical/Lumber traction	2
Gathre Smith suspension	1
Stationary bike	2
Wave therapy	1
Examination room-1 (TB)	
Examination Desk set	1
Equipment Cabinet	1
Wastebin with lid	1
Treatment table	1
Bed-side screen	1
Torch, medical, pen-sized	1
Thermometer, digital	1
Stethoscope, binaural	1
BP machine, adult	1
X-ray film viewer	1
Existing facility	
Internal medicine ward	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Ward	
Bed pan	1
Excretion care set	1
Thermometer, digital	2
Weighing scale, adult	1
Stethoscope, binaural	2
BP machine, adult	2

Name of Equipment	Q'ty
BP machine, child	1
Glucometer	2
Trolley, medicine	1
Dressing tray, medium	1
Dressing trolley	1
Dressing set	3
Drip stand	6
Oxygen concentrator	2
Suction pump, electric	1
Pulse oximeter, finger type	2
Delivery dept.	
Nurse station	
Equipment Cabinet	1
Wastebin with lid	1
Ante partum room	
Examination couch, gynecological	1
Footstool, one-step	1
Examination light	1
Traube	1
Vaginal speculum, small	2
Vaginal speculum, medium	3
Vaginal speculum, large	3
Delivery room	
Instrument cabinet	1
Instrument trolley	2
Drip stand	4
Footstool, one-step	4
Operating stool, revolving	2
Vaginal delivery/episiotomy set	5
Kick-about bowl	2
Manual vacuum aspiration (MVA) kit	5
Vacuum extractor, electrical	1
Weighing scale, infant, beam type	1
Suction pump, electric	1
BP machine, adult	1
Ultrasonic diagnostic device(Mobile type)	1
Post partum ward	
Bed pan	1
Emergency dept.	
Wheelchair	1
Stretcher	1
Hospital bed, hospital model, two-sectioned, with mattress	3
Hospital bed, hospital model, two-sectioned, with mattress	1
Bed-side screen	2
Over-bed table	1
Bed pan	1
Excretion care set	1

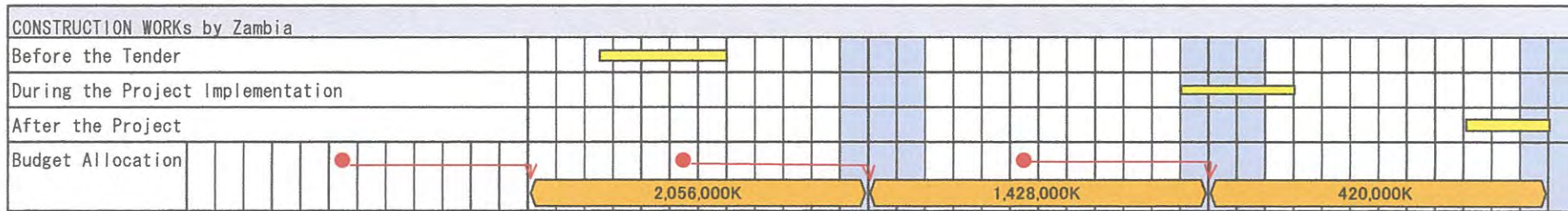
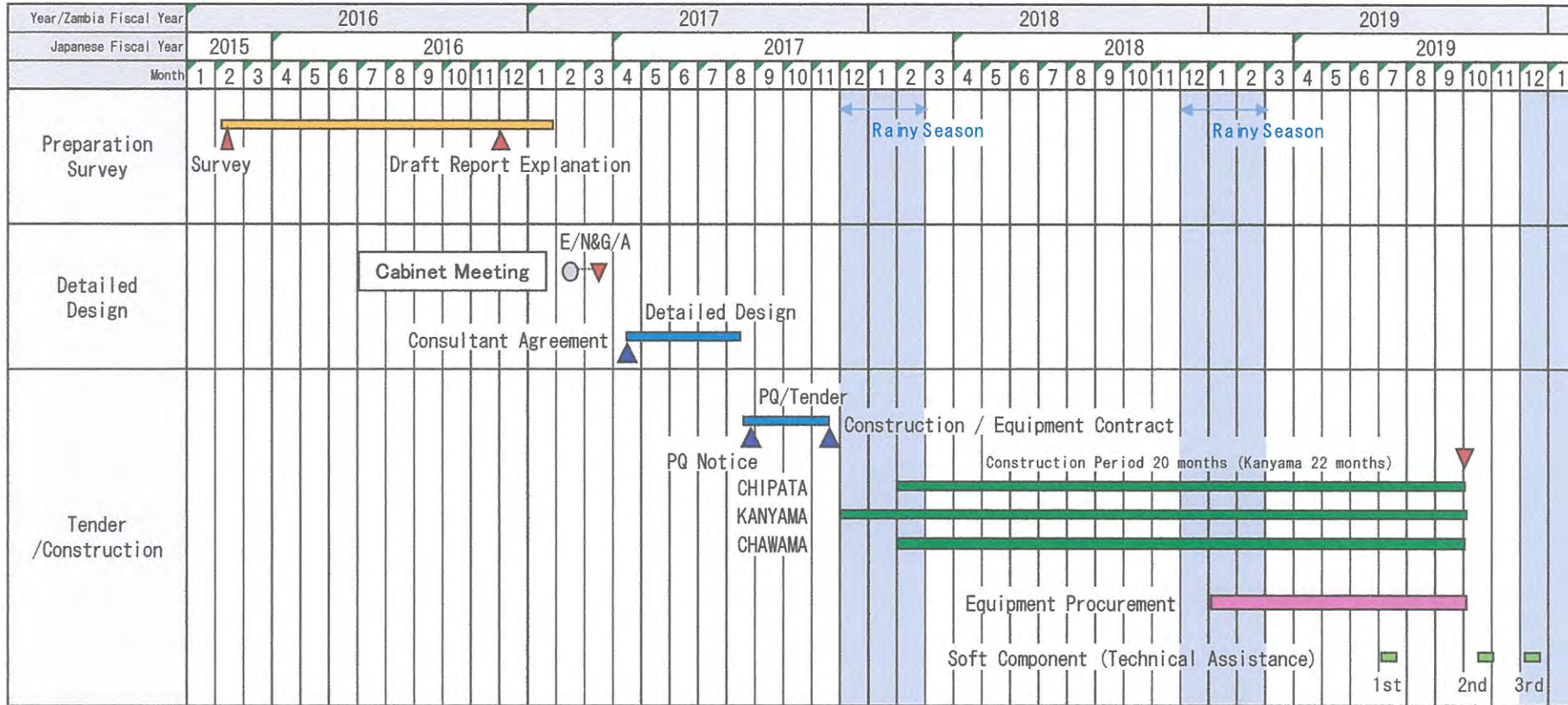
Name of Equipment	Q'ty
Drip stand	4
Oxygen concentrator	1
Suction pump, electric	1
Ambu Bag for Adults	1
Ambu Bag for Children	1
Diagnostic set	1
X-Ray film viewing box (negatoscope)	1
Laboratory dept.	
Anaerobic jar	1
Analytical balance	1
Autoclave for laboratory, medium	1
Binocular microscope	1
Blood bank refrigerator	1
Bunsen burner	1
Centrifuge, small	1
Differential counter	1
Flammable liquid cabinet	1
Hot air oven	1
Hot plate, controlled temperature	1
Laboratory incubator, medium	1
Laboratory refrigerator/freezer	1
Microhaematocrit centrifuge	1
Micropipettes, automated	1
pH meter	1
Roller/mixer	1
Timer	1
Water bath	1
Water distiller	1
Maintenance	
Maintenance Set	1

Note:

1. MOH will prepare back up generator for following equipment.
Blood bank refrigerator, Laboratory refrigerator/freezer in existing Laboratory
2. Engineer of MOH will maintain Bedpan Washer.

MS

Project Implementation Schedule



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Major Undertakings to be taken by each Government

1. Major Undertakings to be taken by Recipient Government

(1) Before the Tender

1) Common

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
1	To Open Bank Account (Banking Arrangement (B/A))	Within 1 month after G/A	MOF	-	-
2	To implement Environmental Impact Assessment (EIA)	Before start of the construction	MOH	-	-
3	To secure the following lands (Chipata, Kanyama, Chawama) 1) Project sites 2) Construction vehicles routes 3) Temporary construction yard and stock yard near the Project area (Chipata:, Kanyama:, Chawama: 1,200m ² respectively)	Before notice of the tender document	MOH	-	-
4	To obtain the planning, zoning, building permit		MOH	-	-
5	To submit Project Monitoring Report (with the result of Detail Design)	End of Detail Design	MOH	-	MD
6	To maintain functions in the demolished facilities until the time new facilities function	-	MOH	-	-

(B/A: Banking Arrangement)

2) Chipata

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
1	To clear, level and relocate utilities Storage	Before notice of the tender document	MOH	10	Draft Final Report Figure 2-40
2	To clear, level and relocate Chlorine house			20	
3	To clear and level Tent and WC			15	
4	To clear, level and relocate utilities EHT and VCT			30	
5	To clear, level and relocate utilities Container store			10	
6	To clear, level and relocate TB shelter			30	
7	To clear, level and relocate TB ultrasound			30	
8	To relocate telephone cabling			20	
9	To clear and level part of boundary wall			60	
10	To clear and level existing some walls, underground foundations, and trees			100	

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3) Kanyama

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
1	To clear and level 4 staff houses, septic tank and soak tank	Before notice of the tender document	MOH	200	Draft Final Report Figure 2-42
	To notice to the residents				
	To make the staff move out				
	To start clearing house and level housing area				
2	To relocate Pharmacy storage				
3	To clear and level Trees on project site				
4	To clear and level part of boundary wall				
5	To clear fences for staff houses				
6	To clear Existing electrical power cable for 4 staff houses				

4) Chawama

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
1	To clear and level Post office, ATM, and trees on project site	Before notice of the tender document	MOH	200	Draft Final Report Figure 2-44
2	To relocate Pharmacy storage			10	
3	To relocate, clear and level Generator house			200	
4	To relocate, clear and level Guard house			15	
5	To relocate to west side, clear and level Mortuary			500	
6	To relocate, clear and level TB			10	
7	To clear and level WC			10	
8	To clear and level some boundary wall			60	
9	To relocate Existing electrical power cable and Transformer			150	
10	To construct boundary wall and gate on project site			300	

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(2) During the Project Implementation

1) Common

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
21	To bear the following commissions to a bank of Japan for the banking services based upon the B/A	Within 1 month after the signing of the contract	MOH	0.1% of the Project cost	-
	1) Advising commission of A/P 2) Payment commission for A/P	Every payment	MOF		
22	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country	During the Project	MOH (Procurement)	-	-
	1) Tax exemption and customs clearance of the products at the port of disembarkation 2) Internal transportation from the port of disembarkation to the project site		Contractor	-	-
23	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		MOH	-	-
24	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted		MOH	-	-
	Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		MOH	-	-
25	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	MOH	-	-	
26	To facilitate the exemption from the registration of the Project related Japanese contractors and consultants with the National Council of the Construction or other relevant agencies	Before Construction	MOH	-	-
27	To submit Project Monitoring Report	Every Month	MOH	-	MD

(A/P: Authorization to pay)

2) Chipata

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
21	Electricity Power supply to new substation and metering devices for the project	6 months Before Completion of the Construction	MOH	55	Draft Final Report Figure 2-41
22	Water Supply Water supply to the project site (from a well)			200	
23	Drainage Connection work of storm water drainage in the project site to existing off-site storm water open ditches			300	
24	Telephone system Provide telephone main trunk line to the main distribution frame/panel (MDF)			5	

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3) Kanyama

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
21	Electricity Power supply to new substation and metering devices for the project	6 months Before Completion of the Construction	MOH	55	Draft Final Report Figure 2-43
22	Water Supply Water supply to the project site (from a well)			45	
23	Drainage Connection work of storm water drainage in the project site to existing off-site storm water open ditches			350	
24	Telephone system Provide telephone main trunk line to the main distribution frame/panel (MDF)			8	

4) Chawama

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
21	Electricity Power supply to new substation and metering devices for the project	6 months Before Completion of the Construction	MOH	55	Draft Final Report Figure 2-45
22	Water Supply Water supply to the project site (from a well)			200	
23	Drainage Connection work of storm water drainage in the project site to existing off-site storm water open ditches			45	
24	Telephone system Provide telephone main trunk line to the main distribution frame/panel (MDF)			5	

(3) After the Project

1) Common

NO	Items	Deadline	In charge	Estimated Cost (1,000K)	Ref.
31	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operations and maintenance structure 3) Routine check/Periodic inspection 4) Allocation of sufficient staff appropriately	After completion of the construction	MOH	-	-
32	To provide General furniture, linen, and curtains		MOH	Chipata:120 Kanyama:180 Chawama:120	-
33	To move to new facilities		MOH		-
34	To construct Exterior Work (landscaping, planting, etc.)		MOH	-	-

2. Major Undertakings to be Covered by the Japanese Grant

NO	Items	Deadline	Amount (Million Japanese Yen)*
1	To construct facilities and To procure equipment - Improvement of Chipata Level 1 Hospital, Kanyama Level 1 Hospital and Chawama Level 1 Hospital 1) To conduct the following transportation a) Marine(Air) transportation of the products from Japan to the recipient country b) Internal transportation from the port of disembarkation to the project site 2) To construct access roads a) Within the site 3) To construct the temporary building 4) To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities a) Electricity - The drop wiring and internal wiring within the site - The main circuit breaker and transformer b) Water Supply - The supply system within the site (receiving and/or elevated tanks) c) Drainage - The drainage system (for toilet sewer, ordinary waster, storm drainage and others) within the site d) Furniture and Equipment - Medical furniture and fixed furniture - Curtain rails and medical curtains - Supply and installation of medical equipment	During the Construction	
2	To implement detailed design, bidding support and construction supervision (Consulting Service)	During the Project	
	Total		

*The amount is provisional. This is subject to the approval of the Government of Japan.

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Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
 20XX, Month

Organizational Information

Signer of the G/A (Recipient)	Person in Charge (Designation) _____
	Contacts _____
	Address: _____
	Phone/FAX: _____ Email: _____
Executing Agency	Person in Charge (Designation) _____
	Contacts _____
	Address: _____
	Phone/FAX: _____ Email: _____
Line Ministry	Person in Charge (Designation) _____
	Contacts _____
	Address: _____
	Phone/FAX: _____ Email: _____

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

1: Project Description

1-1 Project Objective

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1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

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1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

2-2 Scope of the work

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)

Handwritten signature/initials

Handwritten initials JWM

2-3 Implementation Schedule

Items	Original		Actual
	<i>(proposed in the outline design)</i>	<i>(at the time of signing the Grant Agreement)</i>	

Reasons for any changes of the schedule, and their effects on the project (if any)

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2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
	1.			
Total				

Note: 1) Date of estimation:

2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components			Cost (1,000 Taka)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
	1.			
Total				

Handwritten signature/initials

Handwritten initials JWM

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original (at the time of outline design)
name:
role:
financial situation:
institutional and organizational arrangement (organogram):
human resources (number and ability of staff):

Actual (PMR)

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

Original (at the time of outline design)

Actual (PMR)

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original (at the time of outline design)

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Jm

Actual (PMR)

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (at the time of outline design)

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:

	Contingency Plan (if applicable):
Actual Situation and Countermeasures	
(PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

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5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

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5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

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JLm

Attachment

1. Project Location Map
 2. Specific obligations of the Recipient which will not be funded with the Grant
 3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
 5. Environmental Monitoring Form / Social Monitoring Form
 6. Monitoring sheet on price of specified materials (Quarterly)
 7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
 8. Pictures (by JPEG style by CD-R) (PMR (final) only)
 9. Equipment List (PMR (final) only)
 10. Drawing (PMR (final) only)
 11. Report on RD (After project)



Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st	2nd	3rd	4th	5th	6th
		●month, 2015	●month, 2015	●month, 2015			
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)

(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

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Standard Establishment for Level 1 Hospital in Lusaka

SECTION_NAME	UNIT_NAME	POST_NAME	PROPOSED
ADMINISTRATION	ADMINISTRATION	MEDICAL OFFICER IN CHARGE	1
ADMINISTRATION	ADMINISTRATION	HOSPITAL ADMINISTRATOR	1
ADMINISTRATION	ADMINISTRATION	NIGHT SUPERINTENDENT	2
ADMINISTRATION	ADMINISTRATION	OFFICE ORDERLY	1
ADMINISTRATION	ADMINISTRATION	REGISTRY CLERK	2
ADMINISTRATION	ADMINISTRATION	SENIOR NURSING OFFICER	1
ADMINISTRATION	ADMINISTRATION	PRINCIPAL CLINICAL OFFICER	1
ADMINISTRATION	ADMINISTRATION	TELEPHONE OPERATOR	2
ADMINISTRATION	ADMINISTRATION	TYPIST	2
ADMINISTRATION	ADMINISTRATION	STENOGRAPHER	1
ADMINISTRATION	ADMINISTRATION	DRIVER	2
ADMINISTRATION	HUMAN RESOURCES	ASSISTANT HUMAN RESOURCES MANAGEMENT OFFICER	1
ADMINISTRATION	MAINTENANCE	MEDICAL EQUIPMENT TECHNOLOGIST	1
ADMINISTRATION	MAINTENANCE	ELECTRICAL TECHNICIAN	1
ADMINISTRATION	MAINTENANCE	REFRIDGERATION TECHNICIAN	1
ADMINISTRATION	MAINTENANCE	CARPENTER	1
ADMINISTRATION	MAINTENANCE	PLUMBER	1
ADMINISTRATION	MAINTENANCE	OUTDOOR SERVANT	1
ADMINISTRATION	CATERING	CATERING OFFICER	1
ADMINISTRATION	CATERING	COOK	2
ADMINISTRATION	CATERING	WAITER	2
ADMINISTRATION	LAUNDRY	LAUNDRYMAN	3
ADMINISTRATION	LAUNDRY	TAILOR	1
ADMINISTRATION	MORTUARY	MORTUARY ATTENDANT	2
ADMINISTRATION	SECURITY	SECURITY GUARD	4
PROCUREMENT	PROCUREMENT	PURCHASING AND SUPPLIES OFFICER	1
PROCUREMENT	PROCUREMENT	PURCHASING AND SUPPLIES ASSISTANT	1
HEALTH INFORMATION SYSTEMS & PLANNING		HEALTH INFORMATION OFFICER	1
HEALTH INFORMATION SYSTEMS & PLANNING		MEDICAL RECORDS OFFICER	1
HEALTH INFORMATION SYSTEMS & PLANNING		MEDICAL RECORDS CLERK	4
ENVIRONMENTAL HEALTH AND WASTE MANAGEMENT		ENVIRONMENTAL HEALTH TECHNOLOGIST	1
PHARMACY	BULK STORE	SENIOR PHARMACY TECHNOLOGIST	1
PHARMACY	BULK STORE	CLEANER	1
PHARMACY	PHARMACY	PHARMACY TECHNOLOGIST	1
PHARMACY	PHARMACY	PHARMACY DISPENSER	1
PHYSIOTHERAPY	PHYSIOTHERAPY	PHYSIOTHERAPIST	1
PHYSIOTHERAPY	PHYSIOTHERAPY	PHYSIOTHERAPY TECHNOLOGIST	2
RADIOLOGY	RADIOLOGY	RADIOGRAPHER	1
RADIOLOGY	RADIOLOGY	SENIOR RADIOGRAPHER	1
RADIOLOGY	RADIOLOGY	RADIOGRAPHY TECHNOLOGIST	3
RADIOLOGY	RADIOLOGY	DARKROOM ASSISTANT	2
NUTRITION	NUTRITION	NUTRITIONIST	1
LABORATORY	LABORATORY	SENIOR MEDICAL LABORATORY TECHNOLOGIST	1
LABORATORY	LABORATORY	MEDICAL LABORATORY TECHNOLOGIST	3
LABORATORY	LABORATORY	MEDICAL LABORATORY TECHNICIAN	1

Annex 8

SECTION_NAME	UNIT_NAME	POST_NAME	PROPOSED
OUT-PATIENT	OUT-PATIENTS	MEDICAL LICENTIATE	1
OUT-PATIENT	OUT-PATIENTS	GENERAL MEDICAL OFFICER	1
OUT-PATIENT	OUT-PATIENTS	SENIOR CLINICAL OFFICER DERMATOLOGY	1
OUT-PATIENT	OUT-PATIENTS	CLINICAL OFFICER OPHTHALMOLOGY	1
OUT-PATIENT	OUT-PATIENTS	CLINICAL OFFICER	2
OUT-PATIENT	OUT-PATIENTS	CLINICAL OFFICER PSYCHIATRY	1
OUT-PATIENT	OUT-PATIENTS	NURSING SISTER	1
OUT-PATIENT	OUT-PATIENTS	REGISTERED NURSE	1
OUT-PATIENT	OUT-PATIENTS	ZAMBIA ENROLLED NURSE	5
OUT-PATIENT	OUT-PATIENTS	CLEANER	3
OUT-PATIENT	OUT-PATIENTS	PORTER	2
ANTIRETROVIRAL THERAPY		MEDICAL LICENTIATE	1
ANTIRETROVIRAL THERAPY		GENERAL MEDICAL OFFICER	1
ANTIRETROVIRAL THERAPY		CLINICAL OFFICER	2
ANTIRETROVIRAL THERAPY		NURSING SISTER	1
ANTIRETROVIRAL THERAPY		REGISTERED NURSE	1
ANTIRETROVIRAL THERAPY		ZAMBIA ENROLLED NURSE	2
ANTIRETROVIRAL THERAPY		PHARMACY TECHNOLOGIST	1
MEDICINE	MALE MEDICAL WARD	NURSING SISTER	1
MEDICINE	MALE MEDICAL WARD	REGISTERED NURSE	2
MEDICINE	MALE MEDICAL WARD	ZAMBIA ENROLLED NURSE	5
MEDICINE	FEMALE MEDICAL WARD	NURSING SISTER	1
MEDICINE	FEMALE MEDICAL WARD	REGISTERED NURSE	2
MEDICINE	FEMALE MEDICAL WARD	ZAMBIA ENROLLED NURSE	5
MEDICINE	FEMALE MEDICAL WARD	CLEANER	2
OBSTETRICS AND GYNAECOLOGY	GYNAECOLOGY WARD	MEDICAL LICENTIATE	1
OBSTETRICS AND GYNAECOLOGY	GYNAECOLOGY WARD	REGISTERED MIDWIFE	1
OBSTETRICS AND GYNAECOLOGY	GYNAECOLOGY WARD	ZAMBIA ENROLLED NURSE	6
OBSTETRICS AND GYNAECOLOGY	GYNAECOLOGY WARD	CLEANER	2
OBSTETRICS AND GYNAECOLOGY	OBSTETRICS WARD	SENIOR RESIDENT MEDICAL OFFICER	1
OBSTETRICS AND GYNAECOLOGY	OBSTETRICS WARD	NURSING SISTER	1
OBSTETRICS AND GYNAECOLOGY	OBSTETRICS WARD	REGISTERED MIDWIFE	2
OBSTETRICS AND GYNAECOLOGY	OBSTETRICS WARD	ZAMBIA ENROLLED MIDWIFE	7
OBSTETRICS AND GYNAECOLOGY	OBSTETRICS WARD	CLEANER	2
SURGICAL/ORTHOPEDIC	MALE SURGICAL WARD	CLINICAL OFFICER	1
SURGICAL/ORTHOPEDIC	MALE SURGICAL WARD	NURSING SISTER	1
SURGICAL/ORTHOPEDIC	MALE SURGICAL WARD	REGISTERED NURSE	2
SURGICAL/ORTHOPEDIC	MALE SURGICAL WARD	ZAMBIA ENROLLED NURSE	6
SURGICAL/ORTHOPEDIC	FEMALE SURGICAL WARD	REGISTERED MIDWIFE	1
SURGICAL/ORTHOPEDIC	FEMALE SURGICAL WARD	REGISTERED NURSE	1
SURGICAL/ORTHOPEDIC	FEMALE SURGICAL WARD	ZAMBIA ENROLLED NURSE	4
SURGICAL/ORTHOPEDIC	FEMALE SURGICAL WARD	CLEANER	2
THEATRE	THEATRE	THEATRE SUPERINTENDENT	1
THEATRE	THEATRE	SENIOR CLINICAL OFFICER ANAESTHESIA	1
THEATRE	THEATRE	CLINICAL OFFICER ANAESTHESIA	1
THEATRE	THEATRE	REGISTERED THEATRE NURSE	2
THEATRE	THEATRE	ZAMBIA ENROLLED NURSE	2
THEATRE	THEATRE	THEATRE ATTENDANT	2
THEATRE	THEATRE	PORTER	1
THEATRE	THEATRE	CLEANER	2
PAEDIATRICS	MEDICAL WARD	NURSING SISTER	1
PAEDIATRICS	MEDICAL WARD	REGISTERED NURSE	2
PAEDIATRICS	MEDICAL WARD	ZAMBIA ENROLLED NURSE	4
PAEDIATRICS	MEDICAL WARD	CLEANER	3
PAEDIATRICS	SURGICAL WARD	SENIOR RESIDENT MEDICAL OFFICER	1
PAEDIATRICS	SURGICAL WARD	REGISTERED NURSE	2
PAEDIATRICS	SURGICAL WARD	ZAMBIA ENROLLED NURSE	6
PAEDIATRICS	SURGICAL WARD	CLEANER	3
ORAL HEALTH	ORAL HEALTH	DENTAL SURGEON	1
ORAL HEALTH	ORAL HEALTH	DENTAL TECHNOLOGIST	1
ORAL HEALTH	ORAL HEALTH	DENTAL THERAPIST	2
ORAL HEALTH	ORAL HEALTH	CLEANER	1

Maintenance Cost

(1) Chipata Level 1 Hospital

Expense Item	First Year	Second Year and Beyond
① Electricity Charge	125,016	125,016
② Phone Charge	11,736	11,736
③ Generator Fuel Charge	27,740	27,740
④ Oxygen Gas Charge	14,256	14,256
⑤ Building Running Cost	0	15,144
⑥ Outsourcing Cost for Facility Equipment Maintenance	0	36,000
Subtotal ①~⑥ (Facility Maintenance Cost)	178,748	229,892
⑦ Medical Equipment Maintenance Cost	337,084	337,084
Total ① -⑦	515,832	566,976

Unit: Kwacha

(2) Kanyama Level 1 Hospital

Expense Item	First Year	Second Year and Beyond
① Electricity Charge	156,120	156,120
② Phone Charge	10,008	10,008
③ Generator Fuel Charge	27,740	27,740
④ Oxygen Gas Charge	8,553	8,553
⑤ Building Running Cost	0	24,396
⑥ Outsourcing Cost for Facility Equipment Maintenance	0	30,000
Subtotal ①~⑥ (Facility Maintenance Cost)	202,421	256,817
⑦ Medical Equipment Maintenance Cost	332,246	332,246
Total ①~⑦	534,667	589,063

Unit: Kwacha

(3) Chawama Level 1 Hospital

Expense Item	First Year	Second Year and Beyond
① Electricity Charge	125,016	125,016
② Phone Charge	11,736	11,736
③ Generator Fuel Charge	27,740	27,740
④ Oxygen Gas Charge	14,256	14,256
⑤ Building Running Cost	0	16,080
⑥ Outsourcing Cost for Main Equipment Maintenance	0	36,000
Subtotal ①~⑥ (Facility Maintenance Cost)	178,748	230,828
⑦ Equipment Maintenance Cost	338,432	338,432
total ①~⑦	517,180	569,260

Unit: Kwacha

*The above estimated cost for each hospital covers only the facilities and equipment funded by the Japan's Grant Aid.

Necessary Renovations to the Level 1 Hospital after construction of new hospital buildings

1) Chipata Level 1 Hospital

NO	Items
1	To renovate existing OPD as Physiotherapy
2	To renovate existing OP theatre as casualty
3	To renovate a part of existing ART as MCH (if necessary)

2) Kanyama Level 1 Hospital

NO	Items
1	To renovate existing OPD as MCH (if necessary)
2	To renovate existing OP theatres as casualty
3	To renovate existing Male, Female, and Paediatrics Ward as Paediatrics Ward
4	To renovate existing Ante-/Post-natal and Delivery Ward as Isolation Ward (if necessary)
5	To renovate existing ART as Administration (if necessary)

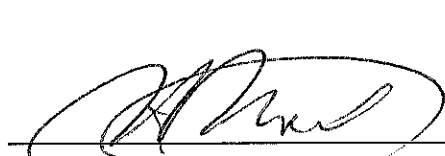
3) Chawama Level 1 Hospital

NO	Items
1	To renovate OP Theatre as casualty
2	To renovate OPD as MCH (if necessary)
3	To clear and level Physiotherapy (if necessary)

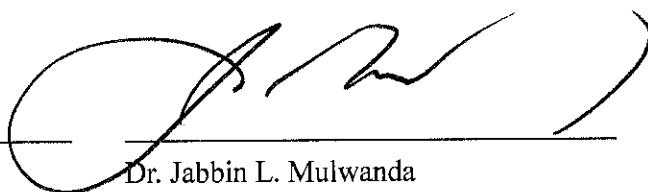
**Amendment of Minutes of Discussions
on the Preparatory Survey for the Project for
Upgrading of Lusaka Health Centres to Level 1 Hospitals
(Explanation on Draft Preparatory Survey Report)**

The Japan International Cooperation Agency and Ministry of Health, the Republic of Zambia hereby agree that the minutes of discussions on the Preparatory Survey for the Project for Upgrading of Lusaka Health Centres to Level 1 Hospitals signed on 8th December, 2016 will be amended as attached;

Lusaka, 31 January, 2017



Mr. Hisanao Noda
Chief Representative
Zambia Office
Japan International Cooperation Agency
Japan



Dr. Jabbin L. Mulwanda
Permanent Secretary (Technical Services)
The Ministry of Health
The Republic of Zambia

ATTACHMENT

The details of amendments are as described.

1. Equipment List

Before	Amended Version
As attached Annex 4	As attached Annex 1
Reason: The equipment list attached to the M/D signed on 8 th December, 2016 is revised due to some mistakes.	

Annex 1 Equipment List (revised)

Annex 2 Minutes of Discussions (signed on 8th December, 2016)

List of Equipment

Chipata Level 1 Hospital

No.	Name of Equipment	Q'ty
New Facility		
I. Outpatient Dept.		
CP-1	Wheelchair	2
CP-2	Stretcher	2
Consultation Room-2 (Eye / ENT)		
CP-3	Diagnostic set for Eye and ENT	1
CP-4	Examination Desk set	1
CP-5	Equipment Cabinet	1
CP-6	Wastebin with lid	1
CP-7	Bed-side screen	1
Consultation Room-3 (Gynaecology)		
CP-8	Examination Desk set	1
CP-9	Equipment Cabinet	1
CP-10	Wastebin with lid	1
CP-11	Examination couch, gynecological	1
CP-12	Bed-side screen	1
CP-13	Examination light	1
CP-14	Thermometer, digital	1
CP-15	Stethoscope, binaural	1
CP-16	BP machine, adult	1
CP-17	Vaginal speculum, small	2
CP-18	Vaginal speculum, medium	3
CP-19	Vaginal speculum, large	3
CP-20	X-ray film viewer (Wall mounted type)	1
Consultation Room-4		
CP-21	Examination Desk set	1
CP-22	Equipment Cabinet	1
CP-23	Wastebin with lid	1
CP-24	Treatment table	1
CP-25	Bed-side screen	1
CP-26	Torch, medical, pen-sized	1
CP-27	Thermometer, digital	1
CP-28	Stethoscope, binaural	1
CP-29	BP machine, adult	1
CP-30	X-ray film viewer (Wall mounted type)	1
Consultation Room-5		
CP-31	Examination Desk set	1
CP-32	Equipment Cabinet	1
CP-33	Wastebin with lid	1
CP-34	Treatment table	1
CP-35	Bed-side screen	1
CP-36	Torch, medical, pen-sized	1
CP-37	Thermometer, digital	1
CP-38	Stethoscope, binaural	1

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No.	Name of Equipment	Q'ty
CP-39	BP machine, adult	1
CP-40	X-ray film viewer (Wall mounted type)	1
Consultation Room-6		
CP-41	Examination Desk set	1
CP-42	Equipment Cabinet	1
CP-43	Wastebin with lid	1
CP-44	Treatment table	1
CP-45	Bed-side screen	1
CP-46	Torch, medical, pen-sized	1
CP-47	Thermometer, digital	1
CP-48	Stethoscope, binaural	1
CP-49	BP machine, adult	1
CP-50	X-ray film viewer (Wall mounted type)	1
Consultation Room-7 (Vital)		
CP-51	Examination Desk set	1
CP-52	Equipment Cabinet	1
CP-53	Wastebin with lid	1
CP-54	Treatment table	1
CP-55	Bed-side screen	1
CP-56	Torch, medical, pen-sized	1
CP-57	Thermometer, digital	1
CP-58	Stethoscope, binaural	1
CP-59	BP machine, adult	1
CP-60	X-ray film viewer (Wall mounted type)	1
CP-61	Weighing scale, adult	2
CP-62	Chart, vision-testing, Snellen type	1
CP-63	Patella hammer	1
CP-64	Suction pump, electric	1
CP-65	Ambu bag for adults	1
CP-66	Ambu bag for children	1
CP-67	Dressing trolley	3
CP-68	Pulse oximeter, finger type	2
Treatment Room		
CP-69	Drainage set	3
CP-70	Dressing set	3
CP-71	Suturing set	6
CP-72	Instrument tray, medium	3
CP-73	Drip stand	2
CP-74	Treatment table	2
Ultrasonography Room		
CP-75	Ultrasonic diagnostic device	1
CP-76	Treatment table	1
X-Ray Room		
CP-77	Actinic marker	1
CP-78	Film processor, automatic	1
CP-79	Lead apron	1
CP-80	X-ray film viewing box (Stand type)	1
CP-81	X-ray loading bench (Film hopper)	1

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No.	Name of Equipment	Q'ty
CP-82	X-ray equipment	1
Consultation Room-1 (TB)		
CP-83	Examination Desk set	1
CP-84	Equipment Cabinet	1
CP-85	Wastebin with lid	1
CP-86	Treatment table	1
CP-87	Bed-side screen	1
CP-88	Torch, medical, pen-sized	1
CP-89	Thermometer, digital	1
CP-90	Stethoscope, binaural	1
CP-91	BP machine, adult	1
CP-92	X-ray film viewer (Wall mounted type)	1
Consultation Room-1 (Paediatrics)		
CP-93	Examination Desk set	1
CP-94	Equipment Cabinet	1
CP-95	Wastebin with lid	1
CP-96	Treatment table	1
CP-97	Bed-side screen	1
CP-98	Torch, medical, pen-sized	1
CP-99	Thermometer, digital	1
CP-100	Weighing trousers	1
CP-101	Salter scale	1
CP-102	Stethoscope, binaural	1
CP-103	BP machine, child	1
CP-104	Ear syringe	1
CP-105	X-ray film viewer (Wall mounted type)	1
Consultation Room-2 (Dentistry)		
CP-106	Bench top autoclave	1
CP-107	Dental treatment unit	1
CP-108	Dental film processor	1
CP-109	Dental instrument cabinet	1
CP-110	Dental instrument set	3
CP-111	Dental light curing unit	1
CP-112	Dental treatment trolley	1
CP-113	Dental x-ray unit	1
CP-114	Ultrasonic dental scaler	1
CP-115	Lead apron	1
Pharmacy		
CP-116	20 ml medicine cup	1
CP-117	Drug cabinet, lockable	1
CP-118	Pharmacy apparatus set	1
CP-119	Mixer	1
CP-120	Mortar and pestle	1
CP-121	Pharmacy balance	1
CP-122	Pharmacy heavy duty trolley	1
CP-123	Pharmacy refrigerator	1
CP-124	Tablet and capsule counter	1
CP-125	Tablet counting tray	1




No.	Name of Equipment	Q'ty
CP-126	Vaccine refrigerator	1
CP-127	Water distiller	1
	2. Operation Dept.	
	Theatre	
CP-128	Ambu bag for adults	1
CP-129	Ambu bag for children	1
CP-130	Anesthetic machine	1
CP-131	BP machine, adult	2
CP-132	Bucket, stainless steel with cover	4
CP-133	Electro surgical unit	1
CP-134	Drip stand	2
CP-135	Medical cabinet	1
CP-136	Footstool, one-step	2
CP-137	Laryngoscope set	1
CP-138	Equipment Cabinet	1
CP-139	Mayo table	2
CP-140	Operating stools, revolving	2
CP-141	Operating-room light, fixed, ceiling mounted	2
CP-142	Operating-room light, portable, with stand	2
CP-143	Oxygen concentrator	2
CP-144	Stretcher	2
CP-145	Recovery bed	2
CP-146	Stethoscope, fetal, Pinard	1
CP-147	Vital signs monitor, portable	2
CP-148	X-Ray film viewing box (Stand type)	1
CP-149	Medicine refrigerator	1
CP-150	Suction pump, electric	2
CP-151	Set, amputation	3
CP-152	Set, bilateral tubal ligation	3
CP-153	Set, caesarian section	6
CP-154	Set, Hysterectomy	1
CP-155	Set, dilatation and curettage Set (D+C set)	3
CP-156	Set, laparotomy	3
CP-157	Set, minor surgery	3
	Sterilization Room / Sluice Room	
CP-158	Autoclave, electric, 400 liters	1
CP-159	Bed pan washer	1
CP-160	Sterilizing drum, large	4
CP-161	Sterilizing drum, medium	4
	3. Surgical Ward (Caesarean)	
	Nurse Station	
CP-162	Equipment Cabinet	1
CP-163	Wastebin with lid	1
	Treatment Room	
CP-164	Vaginal speculum, small	2
CP-165	Vaginal speculum, medium	3
CP-166	Vaginal speculum, large	3
CP-167	Thermometer, digital	2



No.	Name of Equipment	Q'ty
CP-168	Salter scale	1
CP-169	Weighing trousers	1
CP-170	BP machine, adult	1
CP-171	Glucometer	1
CP-172	Instrument tray, large	1
CP-173	Dressing tray, medium	1
CP-174	Dressing trolley	1
CP-175	Dressing set	2
CP-176	Treatment table	1
	Ward	
CP-177	Hospital bed (Adult)	8
CP-178	Bed-side cabinet, hospital model	8
CP-179	Drip stand	4
CP-180	Infant cot	3
CP-181	X-ray equipment (Mobile type)	1
	Side Ward	
CP-182	Hospital bed (Adult)	1
CP-183	Bed-side cabinet, hospital model	1
	4. Maternity Dept.	
	Nurse Station	
CP-184	Equipment Cabinet	1
CP-185	Wastebin with lid	1
	Treatment Room	
CP-186	Examination couch, gynecological	1
CP-187	Footstool, one-step	1
CP-188	Examination light	1
CP-189	Traube	1
CP-190	Vaginal speculum, small	2
CP-191	Vaginal speculum, medium	3
CP-192	Vaginal speculum, large	3
	Pre-natal Room	
CP-193	Hospital bed (Adult)	16
	Delivery Room	
CP-194	Instrument cabinet	1
CP-195	Instrument trolley	2
CP-196	Drip stand	4
CP-197	Footstool, one-step	4
CP-198	Operating stool, revolving	4
CP-199	Vaginal delivery/episiotomy set	5
CP-200	Kick-about bowl	4
CP-201	Manual vacuum aspiration (MVA) kit	5
CP-202	Vacuum extractor, electrical	2
CP-203	Weighing scale, infant, beam type	1
CP-204	Suction pump, electric	2
CP-205	BP machine, adult	1
CP-206	Transport Incubator	1
CP-207	Ultrasonic diagnostic device(Mobile type)	1

No.	Name of Equipment	Q'ty
	Post-natal Room	
CP-208	Hospital bed (Adult)	8
CP-209	Bed pan	1
	Premature Infant Room	
CP-210	Infant warmer	3
	Existing Facility	
	5. Casualty	
CP-211	Wheelchair	1
CP-212	Stretcher	1
CP-213	Hospital bed (Adult)	3
CP-214	Hospital bed cradle	1
CP-215	Bed-side screen	2
CP-216	Over-bed table	1
CP-217	Bed pan	1
CP-218	Excretion care set	1
CP-219	Drip stand	4
CP-220	Oxygen concentrator	1
CP-221	Suction pump, electric	1
CP-222	Ambu bag for adults	1
CP-223	Ambu bag for children	1
CP-224	Diagnostic set	1
CP-225	X-Ray film viewing box (Stand type)	1
	6. Ward (Except Obstetrics Ward)	
	Nurse Station	
CP-226	Equipment Cabinet	1
CP-227	Wastebin with lid	1
	Ward	
CP-228	Hospital bed (Adult)	5
CP-229	Bed pan	1
CP-230	Excretion care set	1
CP-231	Thermometer, digital	2
CP-232	Weighing scale, adult	1
CP-233	Stethoscope, binaural	2
CP-234	BP machine, adult	2
CP-235	BP machine, child	1
CP-236	Glucometer	2
CP-237	Medicine trolley	1
CP-238	Dressing tray, medium	1
CP-239	Dressing trolley	1
CP-240	Dressing set	3
CP-241	Drip stand	6
CP-242	Oxygen concentrator	2
CP-243	Suction pump, electric	1
CP-244	Pulse oximeter, finger type	2
	7. Laboratory Dept.	
CP-245	Anaerobic jar	1
CP-246	Analytical balance	1
CP-247	Autoclave for laboratory, medium	1

No.	Name of Equipment	Q'ty
CP-248	Blood bank refrigerator	1
CP-249	Bunsen burner	1
CP-250	Differential counter	1
CP-251	Flammable liquid cabinet	1
CP-252	Hot air oven	1
CP-253	Hot plate, controlled temperature	1
CP-254	Laboratory incubator, medium	1
CP-255	Laboratory refrigerator/freezer	1
CP-256	Microhaematocrit centrifuge	1
CP-257	Micropipettes, automated	1
CP-258	pH meter	1
CP-259	Roller/mixer	1
CP-260	Timer	1
CP-261	Water bath	1
CP-262	Water distiller	1
	8. Maintenance	
CP-263	Maintenance Set	1

Note:

1. MOH will prepare back up generator for the following equipment.

Blood bank refrigerator, Laboratory refrigerator/freezer in the existing Laboratory

2. Engineer of MOH will maintain Bedpan Washer.

List of Equipment

Kanyama Level 1 Hospital

No.	Name of Equipment	Q'ty
New Facility		
1. Outpatient Dept.		
K-1	Wheelchair	2
K-2	Stretcher	2
Consultation Room-1 (Vital)		
K-3	Examination Desk set	1
K-4	Equipment Cabinet	1
K-5	Wastebin with lid	1
K-6	Treatment table	1
K-7	Bed-side screen	1
K-8	Torch, medical, pen-sized	1
K-9	Thermometer, digital	1
K-10	Stethoscope, binaural	1
K-11	BP machine, adult	1
K-12	X-ray film viewer (Wall mounted type)	1
K-13	Weighing scale, adult	2
K-14	Chart, vision-testing, Snellen type	1
K-15	Patella hammer	1
K-16	Suction pump, electric	1
K-17	Resuscitation bag set	1
K-18	Medicine trolley	3
K-19	Pulse oximeter, finger type	2
Consultation Room-2		
K-20	Examination Desk set	1
K-21	Equipment Cabinet	1
K-22	Wastebin with lid	1
K-23	Treatment table	1
K-24	Bed-side screen	1
K-25	Torch, medical, pen-sized	1
K-26	Thermometer, digital	1
K-27	Stethoscope, binaural	1
K-28	BP machine, adult	1
K-29	X-ray film viewer (Wall mounted type)	1
Consultation Room-3		
K-30	Examination Desk set	1
K-31	Equipment Cabinet	1
K-32	Wastebin with lid	1
K-33	Treatment table	1
K-34	Bed-side screen	1
K-35	Torch, medical, pen-sized	1
K-36	Thermometer, digital	1
K-37	Stethoscope, binaural	1
K-38	BP machine, adult	1
K-39	X-ray film viewer (Wall mounted type)	1

No.	Name of Equipment	Q'ty
Consultation Room-4		
K-40	Examination Desk set	1
K-41	Equipment Cabinet	1
K-42	Wastebin with lid	1
K-43	Treatment table	1
K-44	Bed-side screen	1
K-45	Torch, medical, pen-sized	1
K-46	Thermometer, digital	1
K-47	Stethoscope, binaural	1
K-48	BP machine, adult	1
K-49	X-ray film viewer (Wall mounted type)	1
Consultation Room-5		
K-50	Examination Desk set	1
K-51	Equipment Cabinet	1
K-52	Wastebin with lid	1
K-53	Treatment table	1
K-54	Bed-side screen	1
K-55	Torch, medical, pen-sized	1
K-56	Thermometer, digital	1
K-57	Stethoscope, binaural	1
K-58	BP machine, adult	1
K-59	X-ray film viewer (Wall mounted type)	1
Consultation Room-6 (Gynaecology)		
K-60	Examination Desk set	1
K-61	Equipment Cabinet	1
K-62	Wastebin with lid	1
K-63	Examination couch, gynecological	1
K-64	Bed-side screen	1
K-65	Examination light	1
K-66	Thermometer, digital	1
K-67	Stethoscope, binaural	1
K-68	BP machine, adult	1
K-69	X-ray film viewer (Wall mounted type)	1
K-70	Vaginal speculum, small	2
K-71	Vaginal speculum, medium	3
K-72	Vaginal speculum, large	3
Consultation Room-7 (Eye / ENT)		
K-73	Diagnostic set for Eye and ENT	1
K-74	Examination Desk set	1
K-75	Equipment Cabinet	1
K-76	Wastebin with lid	1
K-77	Bed-side screen	1
Consultation Room-8 (Dentistry)		
K-78	Bench top autoclave	1
K-79	Dental treatment unit	1
K-80	Dental film processor	1
K-81	Dental instrument cabinet	1
K-82	Dental instrument set	3

No.	Name of Equipment	Q'ty
K-83	Dental light curing unit	1
K-84	Dental treatment trolley	1
K-85	Dental x-ray unit	1
K-86	Ultrasonic dental scaler	1
K-87	Lead apron	1
	Treatment Room	
K-88	Drainage set	3
K-89	Dressing set	3
K-90	Suturing set	3
K-91	Instrument tray, medium	3
K-92	Drip stand	2
K-93	Treatment table	2
	Pharmacy	
K-94	20 ml medicine cup	1
K-95	Drug cabinet, lockable	1
K-96	Graduated glass measure	1
K-97	Mixer	1
K-98	Mortar and pestle	1
K-99	Pharmacy balance	1
K-100	Pharmacy heavy duty trolley	1
K-101	Pharmacy refrigerator	1
K-102	Tablet and capsule counter	1
K-103	Tablet counting tray	1
K-104	Vaccine refrigerator	1
K-105	Water distiller	1
	Laboratory	
K-106	Anaerobic jar	1
K-107	Analytical balance	1
K-108	Autoclave for laboratory, medium	1
K-109	Binocular microscope	1
K-110	Blood bank refrigerator	1
K-111	Bunsen burner	1
K-112	Centrifuge, small	1
K-113	Differential counter	1
K-114	Flammable liquid cabinet	1
K-115	Hot air oven	1
K-116	Hot plate, controlled temperature	1
K-117	Laboratory incubator, medium	1
K-118	Laboratory refrigerator/freezer	1
K-119	Microhaematocrit centrifuge	1
K-120	Micropipettes, automated	1
K-121	pH meter	1
K-122	Roller/mixer	1
K-123	Timer	1
K-124	Water bath	1
K-125	Water distiller	1
	Ultrasonography Room	
K-126	Ultrasonic diagnostic device	1

No.	Name of Equipment	Q'ty
K-127	Treatment table	1
	X-ray Room	
K-128	Actinic marker	1
K-129	Film processor, automatic	1
K-130	Lead apron	1
K-131	X-Ray film viewing box (Stand type)	1
K-132	X-Ray loading bench (Film hopper)	1
K-133	X-ray equipment	1
	Consultation Room-1 (Paediatrics)	
K-134	Examination Desk set	1
K-135	Equipment Cabinet	1
K-136	Wastebin with lid	1
K-137	Treatment table	1
K-138	Bed-side screen	1
K-139	Torch, medical, pen-sized	1
K-140	Thermometer, digital	1
K-141	Stethoscope, binaural	1
K-142	BP machine, child	1
K-143	X-ray film viewer (Wall mounted type)	1
K-144	Salter scale	1
K-145	Weighing trousers	1
K-146	Ear syringe	1
K-147	Resuscitation bag set	1
	Consultation Room-2 (TB)	
K-148	Examination Desk set	1
K-149	Equipment Cabinet	1
K-150	Wastebin with lid	1
K-151	Treatment table	1
K-152	Bed-side screen	1
K-153	Torch, medical, pen-sized	1
K-154	Thermometer, digital	1
K-155	Stethoscope, binaural	1
K-156	BP machine, adult	1
K-157	X-ray film viewer (Wall mounted type)	1
	2. Operation Dept.	
	Theatre	
K-158	Ambu bag for adults	1
K-159	Ambu bag for children	1
K-160	Anesthetic machine	1
K-161	BP machine, adult	2
K-162	Bucket, stainless steel with cover	4
K-163	Electro surgical unit	1
K-164	Drip stand	2
K-165	Medical cabinet	1
K-166	Footstool, one-step	2
K-167	Laryngoscope set	1
K-168	Equipment Cabinet	1
K-169	Mayo table	2




No.	Name of Equipment	Q'ty
K-170	Infant warmer	1
K-171	Operating stools, revolving	2
K-172	Operating-room light, fixed, ceiling mounted	2
K-173	Operating-room light, portable, with stand	2
K-174	Oxygen concentrator	2
K-175	Stretcher	2
K-176	Pulse oximeter, separate	2
K-177	Recovery bed	2
K-178	Stethoscope, binaural	1
K-179	Vital signs monitor, portable	2
K-180	X-Ray film viewing box (Stand type)	1
K-181	Medicine refrigerator	1
K-182	Suction pump, electric	2
K-183	Set, amputation	3
K-184	Set, bilateral tubal ligation	3
K-185	Set, caesarian section	6
K-186	Set, Hysterectomy	1
K-187	Set, dilatation and curettage (D+C set)	3
K-188	Set, laparotomy	3
K-189	Set, minor surgery	3
	Sterilization Room / Sluice Room	
K-190	Autoclave, electric, 400 liters	1
K-191	Bed pan washer	1
K-192	Sterilizing drum, large	4
K-193	Sterilizing drum, medium	4
	3. Maternity Dept. (Pre-natal Room)	
	Nurse Station	
K-194	Instrument cabinet	1
K-195	Wastebin with lid	1
	Pre-natal Room	
K-196	Hospital bed (Adult)	20
	4. Surgical Ward (Caesarean)	
	Nurse Station	
K-197	Instrument cabinet	1
K-198	Wastebin with lid	1
	Treatment Room	
K-199	Vaginal speculum, small	1
K-200	Vaginal speculum, medium	2
K-201	Vaginal speculum, large	2
K-202	Thermometer, digital	2
K-203	Thermometer	2
K-204	Salter scale	1
K-205	Weighing trousers	1
K-206	BP machine, adult	1
K-207	Glucometer	1
K-208	Medicine trolley	1
K-209	Dressing tray, medium	1
K-210	Dressing trolley	1



No.	Name of Equipment	Q'ty
K-211	Dressing set	2
K-212	Treatment table	1
	Ward	
K-213	Drip stand	6
K-214	Hospital bed (Adult)	12
K-215	Bed-side cabinet, hospital model	12
K-216	Infant cot	4
K-217	X-ray equipment (Mobile type)	1
	Side Ward	
K-218	Hospital bed (Adult)	1
K-219	Bed-side cabinet, hospital model	1
	5. Medical Ward (Female)	
	Nurse Station	
K-220	Equipment cabinet	1
K-221	Wastebin with lid	1
	Ward	
K-222	Hospital bed (Adult)	21
K-223	Drip stand	10
	Side Ward	
K-224	Hospital bed (Adult)	1
K-225	Bed-side cabinet, hospital model	1
	Treatment Room	
K-226	Treatment table	1
K-227	Thermometer, digital	2
K-228	Weighing scale, adult	1
K-229	Stethoscope, binaural	2
K-230	BP machine, adult	2
K-231	Glucometer	2
K-232	Drip stand	1
K-233	Oxygen concentrator	2
K-234	Suction pump, electric	1
K-235	Pulse oximeter, finger type	2
K-236	Dressing trolley	1
	6. Medical Ward (Male)	
	Nurse Station	
K-237	Instrument cabinet	1
K-238	Wastebin with lid	1
	Ward	
K-239	Hospital bed (Adult)	21
K-240	Excretion care set	1
K-241	Drip stand	10
	Side Ward	
K-242	Hospital bed (Adult)	1
K-243	Bed-side cabinet, hospital model	1
	Treatment Room	
K-244	Treatment table	1
K-245	Thermometer, digital	2
K-246	Weighing scale, adult	1

No.	Name of Equipment	Q'ty
K-247	Stethoscope, binaural	2
K-248	BP machine, adult	2
K-249	Glucometer	2
K-250	Drip stand	1
K-251	Oxygen concentrator	2
K-252	Suction pump, electric	1
K-253	Pulse oximeter, finger type	2
K-254	Dressing trolley	1
Existing facility		
7. Casualty		
K-255	Wheelchair	1
K-256	Stretcher	1
K-257	Hospital bed (Adult)	3
K-258	Hospital bed cradle	1
K-259	Bed-side screen	2
K-260	Over-bed table	1
K-261	Excretion care set	1
K-262	Drip stand	4
K-263	Oxygen concentrator	1
K-264	Suction pump, electric	1
K-265	Ambu bag for adults	1
K-266	Ambu bag for children	1
K-267	Diagnostic set	1
K-268	X-Ray film viewing box (Stand type)	1
8. Ward (Paediatrics)		
K-269	Hospital bed cradle	4
K-270	BP machine, child	1
9. Delivery		
K-271	Examination couch, gynecological	1
K-272	Footstool, one-step	1
K-273	Examination light	1
K-274	Traube	1
K-275	Vaginal speculum, small	2
K-276	Vaginal speculum, medium	3
K-277	Vaginal speculum, large	3
K-278	Ultrasonic diagnostic device (Mobile type)	1
10. Maintenance		
K-279	Maintenance Set	1

Note:

1. Engineer of MOH will maintain Bedpan Washer.

List of Equipment

Chawama Level 1 Hospital

No.	Name of Equipment	Q'ty
New Facility		
1. Outpatient Dept.		
CW-1	Wheelchair	2
CW-2	Stretcher	2
Consultation Room-1 (Dentistry)		
CW-3	Bench top autoclave	1
CW-4	Dental treatment unit	1
CW-5	Dental film processor	1
CW-6	Dental instrument cabinet	1
CW-7	Dental instrument set	3
CW-8	Dental light curing unit	1
CW-9	Dental treatment trolley	1
CW-10	Dental x-ray unit	1
CW-11	Ultrasonic dental scaler	1
CW-12	Lead apron	1
Consultation Room-2 (Paediatrics)		
CW-13	Examination Desk set	1
CW-14	Equipment Cabinet	1
CW-15	Wastebin with lid	1
CW-16	Treatment table	1
CW-17	Bed-side screen	1
CW-18	Torch, medical, pen-sized	1
CW-19	Thermometer, digital	1
CW-20	Salter scale	1
CW-21	Weighing trousers	1
CW-22	Stethoscope, binaural	1
CW-23	BP machine, child	1
CW-24	Ear syringe	1
CW-25	Ambu bag for children	1
CW-26	X-ray film viewer (Wall mounted type)	1
Consultation Room-3 (Vital)		
CW-27	Examination Desk set	1
CW-28	Equipment Cabinet	1
CW-29	Wastebin with lid	1
CW-30	Treatment table	1
CW-31	Bed-side screen	1
CW-32	Torch, medical, pen-sized	1
CW-33	Thermometer, digital	1
CW-34	Weighing scale, adult	2
CW-35	Stethoscope, binaural	1
CW-36	BP machine, adult	1
CW-37	Chart, vision-testing, Snellen type	1
CW-38	Patella hammer	1
CW-39	Suction pump, electric	1

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No.	Name of Equipment	Q'ty
CW-40	Ambu bag for adults	1
CW-41	Medicine trolley	3
CW-42	Pulse oximeter, (finger type)	2
CW-43	X-ray film viewer (Wall mounted type)	1
Consultation Room-4		
CW-44	Examination Desk set	1
CW-45	Equipment Cabinet	1
CW-46	Wastebin with lid	1
CW-47	Treatment table	1
CW-48	Bed-side screen	1
CW-49	Torch, medical, pen-sized	1
CW-50	Thermometer, digital	1
CW-51	Stethoscope, binaural	1
CW-52	BP machine, adult	1
CW-53	X-ray film viewer (Wall mounted type)	1
Consultation Room-5		
CW-54	Examination Desk set	1
CW-55	Equipment Cabinet	1
CW-56	Wastebin with lid	1
CW-57	Treatment table	1
CW-58	Bed-side screen	1
CW-59	Torch, medical, pen-sized	1
CW-60	Thermometer, digital	1
CW-61	Stethoscope, binaural	1
CW-62	BP machine, adult	1
CW-63	X-ray film viewer (Wall mounted type)	1
Consultation Room-6		
CW-64	Examination Desk set	1
CW-65	Equipment Cabinet	1
CW-66	Wastebin with lid	1
CW-67	Treatment table	1
CW-68	Bed-side screen	1
CW-69	Torch, medical, pen-sized	1
CW-70	Thermometer, digital	1
CW-71	Stethoscope, binaural	1
CW-72	BP machine, adult	1
CW-73	X-ray film viewer (Wall mounted type)	1
Consultation Room-7 (Gynaecology)		
CW-74	Examination Desk set	1
CW-75	Equipment Cabinet	1
CW-76	Wastebin with lid	1
CW-77	Examination couch, gynecological	1
CW-78	Bed-side screen	1
CW-79	Examination light	1
CW-80	Thermometer, digital	1
CW-81	Stethoscope, binaural	1
CW-82	BP machine, adult	1
CW-83	Vaginal speculum, small	2

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No.	Name of Equipment	Q'ty
CW-84	Vaginal speculum, medium	3
CW-85	Vaginal speculum, large	3
CW-86	X-ray film viewer (Wall mounted type)	1
	Consultation Room-8 (Eye / ENT)	
CW-87	Diagnostic set for Eye and ENT	1
CW-88	Examination Desk set	1
CW-89	Equipment Cabinet	1
CW-90	Wastebin with lid	1
CW-91	Bed-side screen	1
	Treatment Room	
CW-92	Drainage set	3
CW-93	Dressing set	3
CW-94	Suturing set	3
CW-95	Instrument tray, medium	3
CW-96	Drip stand	1
CW-97	Treatment table	2
	Pharmacy	
CW-98	20 ml medicine cup	1
CW-99	Drug cabinet, lockable	1
CW-100	Pharmacy apparatus set	1
CW-101	Mixer	1
CW-102	Mortar and pestle	1
CW-103	Pharmacy balance	1
CW-104	Pharmacy heavy duty trolley	1
CW-105	Pharmacy refrigerator	1
CW-106	Tablet and capsule counter	1
CW-107	Tablet counting tray	1
CW-108	Vaccine refrigerator	1
CW-109	Water distiller	1
	Ultrasonography Room	
CW-110	Ultrasonic diagnostic device	1
CW-111	Treatment table	1
	X-ray Room	
CW-112	Actinic marker	1
CW-113	Film processor, automatic	1
CW-114	Lead apron	1
CW-115	X-Ray film viewing box (Stand type)	1
CW-116	X-Ray loading bench (Film hopper)	1
CW-117	X-ray equipment	1
	2. Operation Dept.	
	Theatre	
CW-118	Ambu bag for adults	1
CW-119	Ambu bag for children	1
CW-120	Anesthetic machine	1
CW-121	BP machine, adult	2
CW-122	Bucket, stainless steel with cover	4
CW-123	Electro surgical unit	1
CW-124	Drip stand	2

No.	Name of Equipment	Q'ty
CW-125	Dangerous drugs, cabinet	1
CW-126	Footstool, one-step	2
CW-127	Laryngoscope set	1
CW-128	Instrument cabinet	1
CW-129	Mayo table	2
CW-130	Operating stools, revolving	2
CW-131	Operating-room light, fixed, ceiling mounted	2
CW-132	Operating-room light, portable, with stand	2
CW-133	Oxygen concentrator	2
CW-134	Stretcher	2
CW-135	Pulse oximeter, separate	2
CW-136	Recovery bed	2
CW-137	Stethoscope, binaural	1
CW-138	Vital signs monitor, portable	2
CW-139	X-Ray film viewing box (Stand type)	1
CW-140	Medicine refrigerator	1
CW-141	Suction pump, electric	2
CW-142	Set, amputation	3
CW-143	Set, bilateral tubal ligation	3
CW-144	Set, caesarian section	6
CW-145	Set, Hysterectomy	1
CW-146	Set, dilatation and curettage Set (D+C set)	3
CW-147	Set, laparotomy	3
CW-148	Set, minor surgery	3
	Sterilization Room/Sluice Room	
CW-149	Autoclave, electric, 400 liters	1
CW-150	Bed pan washer	1
CW-151	Sterilizing drum, large	4
CW-152	Sterilizing drum, medium	4
	3. Surgical Ward (Caesarean)	
	Nurse Station	
CW-153	Equipment Cabinet	1
CW-154	Wastebin with lid	1
	Treatment Room	
CW-155	Vaginal speculum, small	1
CW-156	Vaginal speculum, medium	2
CW-157	Vaginal speculum, large	2
CW-158	Dressing tray, medium	1
CW-159	Dressing trolley	1
CW-160	Dressing set	2
CW-161	Treatment table	1
	Ward	
CW-162	Thermometer, digital	2
CW-163	Salter scale	1
CW-164	Weighing trousers	1
CW-165	BP machine, adult	1
CW-166	Glucometer	1
CW-167	Medicine Trolley	1

No.	Name of Equipment	Q'ty
CW-168	Drip stand	4
CW-169	Hospital bed (Adult)	7
CW-170	Bed-side cabinet, hospital model	7
CW-171	Infant cot	2
CW-172	X-ray equipment (Mobile type)	1
	Side Ward	
CW-173	Hospital bed (Adult)	1
CW-174	Bed-side cabinet, hospital model	1
	4. Physiotherapy Dept.	
	Physiotherapy Room	
CW-175	Therapeutic Ultrasound Machine	2
CW-176	Infra-red Irradiation Machine	2
CW-177	Short wave diathermy	1
CW-178	Infra red, Lumber sacral	1
CW-179	Quadriceps Bench	1
CW-180	Treadmill Machine	2
CW-181	Ultraviolet, Limp	2
CW-182	Treatment couch	3
CW-183	Elliptical	2
CW-184	Electrical Cervical/Lumber traction	2
CW-185	Gathre Smith suspension	1
CW-186	Stationary bike	2
CW-187	Wave therapy	1
	5. Outpatient Dept. (TB)	
	Consultation Room-1 (TB)	
CW-188	Examination Desk set	1
CW-189	Equipment Cabinet	1
CW-190	Wastebin with lid	1
CW-191	Treatment table	1
CW-192	Bed-side screen	1
CW-193	Torch, medical, pen-sized	1
CW-194	Thermometer, digital	1
CW-195	Stethoscope, binaural	1
CW-196	BP machine, adult	1
CW-197	X-ray film viewer (Wall mounted type)	1
	Existing facility	
	6. Medical Ward	
	Nurse Station	
CW-198	Equipment Cabinet	1
CW-199	Wastebin with lid	1
	Ward	
CW-200	Bed pan	1
CW-201	Excretion care set	1
CW-202	Thermometer, digital	2
CW-203	Weighing scale, adult	1
CW-204	Stethoscope, binaural	2
CW-205	BP machine, adult	2
CW-206	BP machine, child	1



No.	Name of Equipment	Q'ty
CW-207	Glucometer	2
CW-208	Medicine trolley	1
CW-209	Dressing tray, medium	1
CW-210	Dressing trolley	1
CW-211	Dressing set	3
CW-212	Drip stand	6
CW-213	Oxygen concentrator	2
CW-214	Suction pump, electric	1
CW-215	Pulse oximeter, finger type	2
	7. Maternity Dept.	
	Nurse Station	
CW-216	Equipment Cabinet	1
CW-217	Wastebin with lid	1
	Pre-natal Room	
CW-218	Examination couch, gynecological	1
CW-219	Footstool, one-step	1
CW-220	Examination light	1
CW-221	Traube	1
CW-222	Vaginal speculum, small	2
CW-223	Vaginal speculum, medium	3
CW-224	Vaginal speculum, large	3
	Delivery Room	
CW-225	Instrument cabinet	1
CW-226	Instrument trolley	2
CW-227	Drip stand	4
CW-228	Footstool, one-step	4
CW-229	Operating stool, revolving	2
CW-230	Vaginal delivery/episiotomy set	5
CW-231	Kick-about bowl	2
CW-232	Manual vacuum aspiration (MVA) kit	5
CW-233	Vacuum extractor, electrical	1
CW-234	Weighing scale, infant, beam type	1
CW-235	Suction pump, electric	1
CW-236	BP machine, adult	1
CW-237	Ultrasonic diagnostic device (Mobile type)	1
	Post-natal Room	
CW-238	Bed pan	1
	8. Casualty	
CW-239	Wheelchair	1
CW-240	Stretcher	1
CW-241	Hospital bed (Adult)	3
CW-242	Hospital bed cradle	1
CW-243	Bed-side screen	2
CW-244	Over-bed table	1
CW-245	Bed pan	1
CW-246	Excretion care set	1
CW-247	Drip stand	4
CW-248	Oxygen concentrator	1



No.	Name of Equipment	Q'ty
CW-249	Suction pump, electric	1
CW-250	Ambu bag for adults	1
CW-251	Ambu bag for children	1
CW-252	Diagnostic set	1
CW-253	X-Ray film viewing box (Stand type)	1
9. Laboratory Dept.		
CW-254	Anaerobic jar	1
CW-255	Analytical balance	1
CW-256	Autoclave for laboratory, medium	1
CW-257	Binocular microscope	1
CW-258	Blood bank refrigerator	1
CW-259	Bunsen burner	1
CW-260	Centrifuge, small	1
CW-261	Differential counter	1
CW-262	Flammable liquid cabinet	1
CW-263	Hot air oven	1
CW-264	Hot plate, controlled temperature	1
CW-265	Laboratory incubator, medium	1
CW-266	Laboratory refrigerator/freezer	1
CW-267	Microhaematocrit centrifuge	1
CW-268	Micropipettes, automated	1
CW-269	pH meter	1
CW-270	Roller/mixer	1
CW-271	Timer	1
CW-272	Water bath	1
CW-273	Water distiller	1
10. Maintenance		
CW-274	Maintenance Set	1

Note:

1. MOH will prepare back up generator for the following equipment.
Blood bank refrigerator, Laboratory refrigerator/freezer in the existing Laboratory
2. Engineer of MOH will maintain Bedpan Washer.



5. Soft Component

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR UPGRADING OF
LUSAKA HEALTH CENTRES TO
DISTRICT HOSPITALS PHASE 2
IN
THE REPUBLIC OF ZAMBIA

Plan of Technical Assistance (Soft-Component)

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- (7) Soft Component Implementation Process
- (8) Soft Component Outcome
- (9) Responsibility of Zambia's Implementing Organisation

January 2017

The Consortium of
Nihon Sekkei, Inc. and Fujita Planning Co., Ltd.

1. Background to Soft Component Planning

By upgrading Chipata UHC, Kanyama UHC and Chawama UHC located in Lusaka District to level 1 hospitals, the project aims to make referral system work and at the same time, mitigate crowded condition and burden in the UTH, a tertiary-level medical facility located in the same district. Components of facility works and medical equipment procurement include construction of OPD/Theatre building and OPD/Maternity building for Chipata Level 1 Hospital (hereinafter referred to as “Chipata Lv1H”, Theatre/Laboratory building and OPD/Ward for Kanyama Level 1 Hospital (hereinafter referred to as “Kanyama Lv1H”), and OPD/Theatre building and OPD/Physiotherapy building for Chawama Level 1 Hospital (hereinafter referred to as “Chipata Lv1H”) as well as provision of the necessary medical equipment for each hospital.

The survey team has presented following concerns regarding current facilities and medical equipment maintenance methods based on field investigations conducted from 15 February to 13 March, 2016:

- ① Maintenance staff members in the DHO are in charge of maintenance works in several level 1 hospitals, but it is difficult to give close attention to all level 1 hospitals.
- ② Medical service level is impaired due to breakdown of facility utilities and medical equipment.
- ③ Medical water is not disposed of correctly, which poses a risk of deteriorating the surrounding environment and causing in-hospital infections.
- ④ Periodic checkups of facility utilities are not conducted.

Regarding above problems, Zambia has requested that technical training shall be given by Japan for maintenance system and water discharge system of newly built facility, and medical equipment.

In Zambia, personnel in charge of facilities and medical equipment at the MOH, DHO, or PHO manages level 1 hospitals, and no personnel is in charge of specific level 1 hospital maintenance as of the time of preparatory survey. The DHO currently divides Lusaka District into 5 zones and sends 2 engineers par zone that go around level 1 hospitals for maintenance. The on-site survey confirms that in accordance with this project, the MOH will assign a Technologist who is a human resource personnel in line with the assignment standard of level 1 hospitals and establish maintenance department for facilities and medical equipment after implementation of the grant aid project, in order to ensure appropriate operation and maintenance of facilities and medical equipment at Chipata Lv1H, Kanyama Lv1H, and Chawama Lv1H. Cooperation with manufacturers’ agencies in Zambia is also planned for appropriate maintenance of medical equipment.

Consumables and spare parts of equipment shall be exclusively managed by above mentioned person in charge of equipment maintenance in DHO warehouse. Equipment maintenance personnel of three level 1 hospitals shall manage directly distributed consumables and spare parts for each facility, and obtain them from DHO warehouse, when needed.

Main improvements expected through implementation of technical assistance in soft component are as follows:

- ① From the viewpoint of the surrounding environment, in-hospital infections, and continuity of medical services, it will make medical staff recognise importance of maintaining facility utilities and medical equipment and enhance knowledge and technical level.
- ② The effect of preventive maintenance will be created by establishing a management system that can keep track of inventory books, failure history, and places to which facility utilities and medical equipment have been allocated, an inventory system to control consumables and replacement parts, and a system for daily and periodic checkups, which will make the budget available, shorten the failure period, reduce the risk of in-hospital infections, and maintain the medical service level.
- ③ By optimising operation of water discharge systems, both inside and outside environment of hospitals will be improved.
- ④ Daily and periodic checkups of facility utilities will be conducted.

In implementing technical assistance, a participatory method will be applied for planning to enhance development of self-reliance; a plan shall be organized in its contents by holding workshops. Formats and ledger of medical equipment maintenance system shall be taken over from recent technical cooperation projects (Health Capital Investment Support Project) without contradiction in the contents, for smooth coordinate with other technical cooperation projects.

2. Object of Technical Assistance

- ① Importance of establishing a medical facility / medical equipment maintenance system shall be recognized in the project hospitals.
- ② Maintenance system of facilities and medical equipment will be established and appropriate maintenance will be conducted at the target hospitals.
- ③ Medical equipment maintenance with daily and periodical check shall be conducted, which will make equipment conditions improved.

3. Technical Assistance Outcome (Direct Effect)

The following table shows outcome achieved through implementation of technical training in technical assistance:

Table 1 Technical Assistance Direct Effect

Technical Training	Direct Effect
Guidance on importance of a maintenance system	<ul style="list-style-type: none"> • Importance of strengthening maintenance system will be understood. • An independent maintenance system will be established to secure appropriate personnel. • The concept of preventive maintenance will be fully recognised.
Guidance on daily and periodic checkups of facility utilities	<ul style="list-style-type: none"> • Daily and periodic checkups of facility utilities will be implemented.
Guidance on establishing maintenance system and enhance management ability	<ul style="list-style-type: none"> • Maintenance ability level of staff will be enhanced. • Facility will be properly utilised and operated. • Handling ability against breakdown will be improved, and periodic checkups will be implemented. • Information of solutions against breakdown will be known, they can smoothly inform proper person to solve breakdown and repair medical equipment.
Guidance on creating and implementing an annual maintenance plan	<ul style="list-style-type: none"> • Appropriate personnel will be appointed (in terms of number or ability) • Annual maintenance plan will be created and its budget will be secured. • Items, numbers, and expenses of supplies needed next year will be grasped, and supplies will be replenished smoothly.

4. Verification of Outcome Achievement

The following table shows indicators to verify achievement of outcome by implementation of technical training in the assistance:

Table 2 Verification of Outcome Achievement

Item	Verification Method
Guidance on importance of maintenance system	<ul style="list-style-type: none"> • Confirmation of assignment of maintenance personnel • Confirmation of appropriate actions for securing budget
Guidance on daily and periodic checkups of facility utilities	<ul style="list-style-type: none"> • Confirmation of implementation status of daily and periodic checkups of facility utilities
Guidance on establishing maintenance system and enhance the management ability	<ul style="list-style-type: none"> • Confirmation of maintenance system flow • Confirmation of medical equipment ledgers • Confirmation of regular checkup sheets and adjustment planning • Confirmation of implementation status of preventive maintenance • Confirmation of implementation status of explanation or guidance to doctors and nurses by maintenance department
Guidance on creating and implementing an annual maintenance plan	<ul style="list-style-type: none"> • Confirmation of documentation: maintenance records, annual maintenance plans • Confirmation of maintenance budget plan for next year

5. Soft Component Activities (Input Planning)

Table 3 Soft Component Activities (Facility Utilities)

Japanese Consultants:

1. Facility maintenance engineer I: To deal with air conditioner equipment, hygiene equipment, and special utilities
2. Facility maintenance engineer II: To deal with receiving power system and light electrical appliances

Target Facility Utilities:

Substation facility, emergency generator, water treatment system, laboratory wastewater treatment system (neutralization tank), septic tanks and infiltration tank, medical gas supply system, nurse call system

Item	Activities	Affected Person	Period	Contents	Outcome
Guidance on importance of maintenance system	<ul style="list-style-type: none"> • Guidance on contents about utility design was conducted. • A maintenance system in Japan shall be introduced, and gist idea of maintenance system and a rough work flow shall be prepared as common practice. 	Superintendent (1 person), Maintenance personnel for facility (1 person) (from all the 3 Lv1Hs)	The First Field Training	Guidance on importance of implementation of periodic checkups of target facility utilities	-
Guidance on daily and periodic checkups of facility utilities	<ul style="list-style-type: none"> • Guidance on daily and periodic checkups of facility utilities 	Maintenance personnel for facility (1 person), All the department at hospital (10 people) (from all the 3 Lv1Hs)	The Second and the Third Field Training	<ul style="list-style-type: none"> Guidance to examine whether generator work correctly by stopping power supply once a year Guidance to check all the nurse call system once a half year Guidance to implement daily and periodic checkups of other facility utilities by setting frequency of checkups properly 	<ul style="list-style-type: none"> • Daily and periodic maintenance manual
Guidance on establishing maintenance system and enhance the management ability	<ul style="list-style-type: none"> • Existing maintenance practice shall be checked, and a maintenance system flow, a work flow chart, and various formats shall be created with utilising cases in Japan. 	Maintenance personnel for facility (1 person) All the department at hospital (10 people) (from all the 3 Lv1Hs)	The Second and the Third Field Training	Various formats about maintenance will be created with utilising cases in Japan.	<ul style="list-style-type: none"> • Maintenance work planning • Maintenance system • Preventative maintenance planning • Ledger of facility utilities
Guidance on creating and implementing an annual maintenance plan	<ul style="list-style-type: none"> • Method of creating an annual maintenance plan shall be taught. • Method to prepare annual budget shall be taught. • Method to place an order for replacement parts and inventory method shall be taught. 	Maintenance personnel for facility (1 person) Accounting personnel (1 person) (from all the 3 Lv1Hs)	The Second and the Third Field Training	Guidance on creation of annual maintenance plan, ledger of facility utilities, and general maintenance plan.	<ul style="list-style-type: none"> • Maintenance budget plan • Annual maintenance planning (created by a technical cooperation project)

Table 4 Soft Component Activities (Medical Equipment)

Japanese Consultants:

1. Management engineer in charge of equipment maintenance: To deal with the equipment maintenance system

Target Medical Equipment

X-ray equipment, Ultrasonic diagnostic device, Anesthetic machine, Electro surgical unit, Vital signs monitor, Transport incubator, Infant warmer, Autoclave (electric, 400 liters), etc.

Item	Activities	Affected Person	Period	Contents	Outcome
To teach the importance of maintenance system	<ul style="list-style-type: none"> • A maintenance system will be introduced in Japan, and the gist of the maintenance system idea and a rough work flow will be prepared as common practice. In addition, practice of maintenance will be provided. 	Superintendent (1 person), Maintenance personnel for medical equipment (1 person) (for Each of the 3 Lv1Hs)	The First Field Training	Maintenance system and work flow will be understood.	—
To help establish a maintenance system and enhance management ability	<ul style="list-style-type: none"> • Existing maintenance practice will be checked, and a maintenance system flow, a work flow chart, and various formats utilising cases in Japan will be created. • Ledger of facility utilities and medical equipment (including daily checkup sheet) will be created. 	Maintenance personnel for medical equipment (1 person) Each department at the hospital (10 people) (for Each of the 3 Lv1Hs)	The Second and Third Field Training	Various formats about maintenance will be created utilising cases in Japan.	<ul style="list-style-type: none"> • Maintenance work planning • Maintenance system • Preventative maintenance planning • Ledger of facility and medical equipment
To help create and implement an annual maintenance plan	<ul style="list-style-type: none"> • How to create an annual maintenance plan will be taught. • How to prepare an annual budget will be taught. • How to place an order for replacement parts and the inventory method will be taught. 	Maintenance personnel for medical equipment (1 person) Accounting personnel (1 person) (for Each of the 3 Lv1Hs)	The Second and Third Field Training	Guidance on the creation of an annual maintenance plan, ledger of facility utilities, and an annual maintenance plan.	<ul style="list-style-type: none"> • Maintenance budget plan • Annual maintenance planning created by a technical cooperation project

6. Resource Procurement Method to Implement Soft Component

Soft component shall be direct support type. There are no local consultants or facility / medical equipment maintenance companies in Zambia that are specialised in maintenance works for facilities and medical equipment. But, some personnel in Matero Lv1H and Chilenje Lv1H who participated soft component programme at the Phase 1 Project shall be involved, as well as provincial medical officers to give advice about solutions of problems through their experience during the soft component programme.

7. Technical Assistance Implementation Process

Work schedule and implementation process of technical assistance is shown below.

Table 5 Work Schedule of Technical Assistance

■Work Schedule in Japan

Before First Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
Contents	
1	Creation of Maintenance System Draft and Materials for Guidance
2	
3	
4	Creation of Preventive Maintenance Planning Draft
5	
6	
7	Creation of Organisation Chart of the Maintenance System Draft Staff Assignment Plan of the Maintenance System Draft
8	
9	

0.45MM

■Work Schedule in Zambia

First Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
Contents	
1	Departure from Tokyo
2	Arrival at Lusaka
3	Meeting with MOH/PHO
4	Internal Meeting/Document Processing
5	Internal Meeting/Document Processing
6	Creation/Guidance/Meeting of Maintenance System of Chipata
7	Creation/Guidance/Meeting of Maintenance System of Kanyama
8	Creation/Guidance/Meeting of Maintenance System of Chawama
9	Creation of Preventive Maintenance Planning of Chipata
10	Creation of Preventive Maintenance Planning of Kanyama
11	Internal Meeting/Document Processing
12	Internal Meeting/Document Processing
13	Creation of Preventive Maintenance Planning of Chawama
14	Report to JICA/MOH
15	Departure from Lusaka
16	Arrival at Tokyo

0.53MM

■Work Schedule in Zambia

Second Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
Contents	
1	Departure from Tokyo
2	Arrival at Lusaka
3	Meeting with MOH/PHO/DHs
4	Reconfirmation of Maintenance Manual of Chipata
5	Reconfirmation of Maintenance Manual of Kanyama
6	Reconfirmation of Maintenance Manual of Chawama
7	Internal Meeting/Document Processing
8	Internal Meeting/Document Processing
9	Maintenance Training, Guidance of Daily and Periodic Checkups at Chipata
10	Maintenance Training, Guidance Operation Plan of Wastewater Treatment system at Chipata
11	Maintenance Training, Guidance of Daily and Periodic Checkups at Kanyama
12	Maintenance Training, Guidance Operation Plan of Wastewater Treatment system at Kanyama
13	Maintenance Training, Guidance of Daily and Periodic Checkups at Chawama
14	Internal Meeting/Document Processing
15	Internal Meeting/Document Processing
16	Maintenance Training, Guidance Operation Plan of Wastewater Treatment system at Chawama
17	Report to JICA/MOH
18	Departure from Lusaka
19	Arrival at Tokyo

0.63MM

■Work Schedule in Japan

After Third Field Training (Facility maintenance engineer I /Medical equipment management engineer)	
Contents	
1	Creation of Maintenance Budget Planning Draft
2	
3	Creation of Facility Utility Ledge Draft
4	
5	Explanation and Meeting for JICA, Revision and Compilition of Final Report

0.25MM

■Work Schedule in Zambia

Third Field Training (Facility maintenance engineer I /Medical equipment management engineer /Facility maintenance engineer II)	
Contents	
1	Departure from Tokyo
2	Arrival at Lusaka
3	Meeting with MOH/PHO/DHs
4	Reconfirmation of Maintenance Manual/Guidance of Maintenance Budget Planning and Creation of Facility Utility Ledge of Chipata
5	Reconfirmation of Maintenance Manual/Guidance of Maintenance Budget Planning and Creation of Facility Utility Ledge of Kanyama
6	Reconfirmation of Maintenance Manual/Guidance of Maintenance Budget Planning and Creation of Facility Utility Ledge of Chawama
7	Internal Meeting/Document Processing
8	Internal Meeting/Document Processing
9	Maintenance Training, Creation of Maintenance Budget Planning of Chipata
10	Maintenance Training, Creation of Facility Utility Ledge of Chipata
11	Maintenance Training, Creation of Maintenance Budget Planning of Kanyama
12	Maintenance Training, Creation of Facility Utility Ledge of Kanyama
13	Maintenance Training, Creation of Maintenance Budget Planning of Chawama
14	Internal Meeting/Document Processing
15	Internal Meeting/Document Processing
16	Maintenance Training, Creation of Facility Utility Ledge of Chawama
17	Report to JICA/MOH
18	Departure from Lusaka
19	Arrival at Tokyo

0.63MM

Work Staff at Japan

• Before First Field Training: Facility maintenance engineer I, Medical equipment management

• After Third Field Training: Facility maintenance engineer I, Medical equipment management

※All staff are the Third Grade

Guidance Staff in Zambia

• First Field Training Facility maintenance engineer I, Medical equipment management

• Second Field Training Facility maintenance engineer I, Medical equipment management

• Third Field Training Facility maintenance engineer I, Medical equipment management
Facility maintenance engineer II

※All staff are the Third Grade

Japanese consultant in charge of guidance will select personnel at the MOH, PHO and DHO who experienced Technical Assistance in the Phase 1 Project as instructors. The agreed content of guidance/cooperation and the whole schedule will be determined with parties involved at Chipata Lv1H, Kanyama Lv1H and Chawama Lv1H, and the implementation period of technical guidance will be sequentially adjusted while evaluating the input and outcome.

During the project, a format system suited to this project concerning the facility utilities will be created in Japan and readjusted in Zambia. For medical equipment, the format system created by the technical cooperation project will continue to be used in principle.

(1) Advance Preparation in Japan

Documents shown as below shall be prepared in Japan to show the first workshop.

Explanation about various formats, workflow charts, others regarding the maintenance system for the assumed facilities.

(2) First Field Training

Education will be done to leaders and staff members in facility / medical equipment maintenance department to strengthen maintenance system through workshops, and at the same time, the participants will shed light on problems lurking in current maintenance works to create an input planning idea. Then whether an acceptance system and a maintenance organisation of the hospitals have been established or not will be verified. In concrete terms, at the workshop, the participants will create an equipment ledger for facilities and medical equipment.

(3) Second Field Training

After checking operation status of various formats and maintenance system created in the first field training, necessary adjustment will be given for system and various formats, and provided additional training as necessary.

The facility utilities (air conditioners / medical gas / water discharge disposal / receiving power system / generators / light electrical appliances, etc.) and medical equipment to be used in the project have already been installed, so guidance shall be on how to create an equipment ledger more concretely using for newly built utilities and medical equipment.

(4) Third Field Training

Final confirmation and adjustment for each ledger and format created during the field trainings will be conducted, and the participants will create a final maintenance plan proposal for newly built facilities and medical equipment according to the final training items prepared in Japan. In particular, they will prepare an annual maintenance plan / annual maintenance budget plan / spare parts management plan, and report the final version of a maintenance plan.

(5) Tasks to Be Performed in Japan

By organising the results of the first, second, and third technical trainings final report will be created.

6. Letter of Support for Approval to use and Relocate the Post Office



All correspondence should be addressed to the District Medical Officer

Tel: +260-211-235554
Fax: +260-211236429

In reply please quote
No:.....

REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

LUSAKA DISTRICT HEALTH OFFICE
P.O. BOX 50827
LUSAKA

16th June 2016

Hon Laurence Sicalwe
Office of the Vice President
Cabinet Office
Lusaka

Dear Sir

RE: LETTER OF SUPPORT FOR APPROVAL TO USE THE POST OFFICE AREA FOR EXPANSION OF CHAWAMA CLINIC INTO A LEVEL ONE HOSPITAL

Following the meeting held at Chawama clinic on 9th June 2016, between, JICA representatives, Ministry of Health, Lusaka DHO, Lusaka PHO, Chawama clinic, Community representatives and yourself, I am hereby following up the request made by JICA for a letter showing approval to use the post Office area for expansion of Chawama clinic into a level one Hospital.

Since JICA indicated that they will no longer use the football pitch for hospital upgrade, the alternate was to use the post office space. This therefore calls for shifting of the post office from its current location so that the hospital can be built starting from that area.

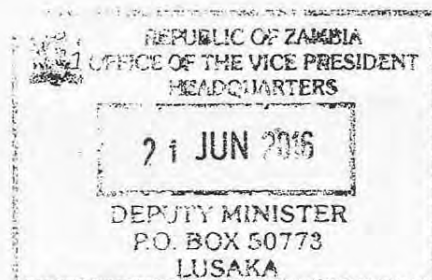
Please note that if we cannot show proof of approval for this space then the Chawama Hospital upgrade project will be suspended.

Find attached a proposed plan for the areas of construction

Your quick and favorable response will be highly appreciated
Yours Sincerely,

Dr. Gideon Zulu,
District Medical Officer
Lusaka District Health Office

CC: Lusaka Provincial Medical Officer



24th June, 2016

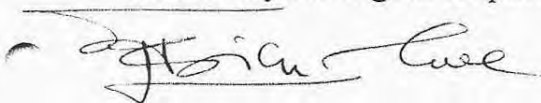
The Permanent Secretary
Ministry of Transport and Communications
LUSAKA

RE: RELOCATION OF CHAWAMA POST OFFICE

We write to seek your approval to relocate the Chawama Post Office to vertically opposite its current location to pave way for expansion of Chawama Clinic into a level one Hospital, as per attached documents.

The Office of the Member of Parliament shall facilitate construction of the new post office structure, as per Council approved plan, before commencement of Clinic expansion project.

We await your urgent response.



Lawrence Sichalwe
Deputy Minister

OFFICE OF THE VICE PRESIDENT

c.c. The District Medical Officer
Lusaka District Health Office
LUSAKA

c.c. Lusaka Provincial Medical Officer
LUSAKA

All correspondence to be addressed
to the Permanent Secretary

Telephone: 211 251444/251758/
253504/251740

Telegrams: TRANSWORKS, RIDGEWAY



REPUBLIC OF ZAMBIA

In reply please quote:

No. MTC/104/1/7

MINISTRY OF TRANSPORT AND COMMUNICATIONS

P. O. BOX 50065
LUSAKA

7th July 2016

Hon. Laurence Sicalwe
Deputy Minister
Office of the Vice President
Cabinet Office
LUSAKA



RE: RELOCATION OF CHAWAMA POST OFFICE

Reference is made to the above subject matter.

The Ministry is in receipt of your letter dated 24th June 2016 seeking approval to relocate Chawama Post Office to pave way for the expansion of Chawama Clinic into a level one Hospital.

The purpose of this letter is to grant approval for the relocation of the Post Office following the construction of a new structure to be facilitated by your office as indicated in your letter.

Eng. Misheck Lungu
Permanent Secretary

MINISTRY OF COMMUNICATIONS AND TRANSPORT

/an