KINGDOM OF CAMBODIA

Ministry of Health

Complementary Package of Activities

BUILDING BRIEF - REFERRAL HOSPITALS

Health Sector Support Project and Civil Works Group (CWG) Version 1- December 2003

Foreward

These documents, the "BUILDING BRIEF - REFERRAL HOSPITALS " and, its annex, the "TABLE OF FUNCTIONS AND FACILITIES", are the result of the hard work of the Civil Works Group (CWG) of the Ministry of Health. Many other Ministry officials and advisors have also contributed to the development of this building brief.

In February 2003 the Ministry of Health completed the "Complementary Package of Activities – Guidelines for the Referral Hospital 2003-2007" (CPA Guidelines).

Now, six months later, the CWG has completed a document that translates the services described in the CPA Guidelines, into a building brief. Simultaneously the guidelines for "Standard Equipment for the Referral Hospital" are being finalized. These three tools will be invaluable in the continued improvement of Hospitals.

It is the first time that the Ministry of Health has produced a building brief such as this and it is intended to serve as the reference document for all future Hospital construction. However, it should not be considered like a "bible" but rather as a basic technical document that can continually evolve and integrate new data in accordance with the real situation.

The BUILDING BRIEF and its TABLE OF FUNCTIONS AND FACILITIES can be put to many important uses. They can serve as discussion documents with end-users to determine building requirements. They should enable stakeholders to understand the scope of works involved in funding Hospitals. They will assist the Ministry of Health in its dialogue with the civil works teams responsible for the next phases of design and construction.

The BUILDING BRIEF is the first step towards upgrading the design of Referral Hospitals to fit the CPA guidelines and to meet the minimum requirements of developing countries as recommended by the World Health Organization.

Especially, this work will contribute to the improvement of the country's Hospitals that are indispensable to support a high standard of health services.

Phnom Penh Director General for Health

Prof. Eng Huot

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ACKNOWLEDGEMENTS

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In addition to the contributions of the above Committee, many key staff of the Ministry of Health, Provinces and Districts as well as experts from nongovernmental organizations have all contributed invaluable input to this Building Brief.

Sincere thanks to them all.

Note

The present building brief and its annexes (in particular the attached "Table of Functions and Facilities"), aims to contribute to improving the design of the Referral Hospital. It results from long meetings of the CWG: (Civil Works Group) and draws on many sources, of which:

- Complementary Package of Activities "Guidelines for the Referral Hospital for 2003-2007", Ministry of Health, Cambodia, February 2003
- District Health Facilities: "Guidelines for Development and Operations" WHO, 1998
- Daniel Dupety, WB Architect's recommendations, Dec 2002
- Completion Report, ADB project, Sheladia Assocs, August 2001
- Civil Works exit report, by Ang Narith, Sheladia Engineer, 25.4.2003
- HSSP Project Implementation Plan November 2002
- William Collins Ph.D "A Study of Health Seeking Behaviour in Kampong Chhnang, Cambodia", 2000
- recommendations resulting from discussions with many Health Sector specialists and visits to existing facilities

Together with the Table of Functions and Facilities in annex 5, this document translates the services to be provided by the Referral Hospital, into a building brief that will assist the Ministry of Health in its dialogue with the civil works teams responsible for the next phase of design and construction (2003-2007).

The building brief is the first step towards upgrading the design of Referral Hospitals to the minimum requirements of developing countries as recommended by the World Health Organisation and to fit the CPA guidelines.

In years to come, as services are improved and elaborated upon, as more equipment becomes available and is supplied, this brief should be continually updated to take into account the upgrading of each CPA category.

1. OBJECTIVES

The main objective of the Health Sector Support Project (HSSP) is the improved delivery of health services for the benefit of the poor and rural population. This requires the continued development of primary health care facilities and first referral and provincial hospitals by realizing civil works (rehabilitation and new constructions), equipment and maintenance. By providing upgraded and new facilities, the aim is to instil more confidence in the general public and to encourage them to consult reliable public health services, also to improve the morale of health staff.

The purpose of this document is to provide all the persons involved in civil works, from Hospital Directors to Civil Works Engineers, Maintenance Engineers or Health Planners, with a document that translates the services described in the CPA Guidelines of the Referral Hospital into a building brief that should serve as a reference for all future Hospital construction, extension or rehabilitation.

2. BACKGROUND, PROJECT INITIATIVE AND FUNDING SOURCE

A joint donor Health Sector Support Project (HSSP) will be implemented between 2003 and 2007 in Cambodia. In addition to the Royal Government of Cambodia (RGC) funding will be provided by an Asian Development Bank (ADB) loan, World Bank (WB) loan and Department for International Development (DFID) grant.

This funding will contribute to the construction of many health facilities, including the upgrading or new construction of approximately 30 Referral Hospitals (14 ADB, 16 WB).

This activity is an extension of work done under a preceding phase of civil works.

The Ministry of Health has already developed a standardized Health Centre design with a Minimum Package of Activities (MPA). In addition, specifications for an elevated model (for use in flood-prone areas) were developed and approved. These standardized designs will continue to be used, but site-specific modifications may sometimes be required.

The Ministry of Health has also developed guidelines for the Referral Hospitals with 3 categories of hospital (CPA 1, CPA 2 and CPA 3) depending on the services to be provided (Complementary Package of Activities) and standard designs for new components of Referral Hospitals consisting of a number of modular buildings. Most of these Hospitals have existing buildings, some of which may be in a good enough state of repair to be renovated.

However, the majority of these buildings are not adapted to the level of health standards that Cambodia is striving to attain, and it is necessary to develop a standard design for a new Referral Hospital that will optimize funding and support the efforts to improve health services throughout the Kingdom. This will also require that attention be paid to the development of an organic site plan integrating the rehabilitated and the new buildings, incorporating walkways, trees and water basins as an integral part of the design.

The basic guideline for evaluating a Hospital's building size is the number of beds (or patients) and the services should be designed around this. According to the World Health Organization the total floor surface of the Referral Hospital can be derived from a ratio of $40M2/bed^1$ i.e. a 105 bed hospital x 40 = 4200M2.² This should be compared with a total of 2282M2 provided for by the previous standard modular buildings.

¹ This ratio allows for all circulation space, waiting areas, and functions. It is valid for complete hospitals and should not be used to calculate the surface of a specific facility such as a 32 bed TB hospital that does not have the complex functions of a Referral Hospital.

² District Health Facilities: Guidelines for Development and Operations WHO 1998 p 9

2.1. The role of the Health Centres and the Referral Hospital

The role of the health centre is the first level of consultation with the Minimum Package of Activities "MPA" that covers curative care, preventive care and management within a radius of 10 km.

The role of the referral hospital is to serve an operational district on two levels – the two tier system - with a Complementary Package of Activities (CPA 1, CPA 2, CPA 3):

- to provide primary health care diagnoses, in-patients, specialized consultations, emergency care, rehabilitation services, educational services (it does not favour 'drop-in' patients who should go to a health centre). Where a health centre does not exist within a 3 km radius from a Referral Hospital it should be provided within the Hospital where it serves as an out-patients consultation.
- to articulate the movement of patients between health centres and national hospitals

2.2. Referral Hospital buildings – past, present and future

Most of the Referral Hospitals exist already. Their buildings were built over a period of fifty years in some cases. Some of these can be integrated into the new design by being renovated, some have to be demolished or put to new uses, but this implies that each hospital has to be specifically planned.

This is why thorough surveys to evaluate the potential reuse of existing buildings are necessary.

As the Hospitals have to continue to function during the civil works, it will also require careful thinking to phase the work.

"prior to this stage of the project, RH's have not been designed as individual hospitals but as "modules", themselves designed as individual unrelated buildings. Because of this there is no specific relationship between buildings or functions on specific sites. This is a problem, because site functions are compromised, consequently staff and patient efficiency and comfort can be improved."³

This is the conclusion of the previous phase of works executed with the WB loan (1997-2002). The buildings have many functional problems. The PIP suggests that the individual building "modules" of the Referral Hospital be redesigned. "This re-design work will maximize improved functional relationships as a matter of good efficient planning".⁴

³ PIP Annex 8 – Civil Works, p 2

⁴ PIP annex 8 – Civil Works p 2

It points to the shortcomings of the standard modular designs that were developed and to the necessity for the ongoing improvement of the Referral Hospital design. Efficient planning should result not only in more functional buildings but also in more cost effective buildings that optimize the standard.

The master site plan will play a major role in determining the successful design to consolidate functional relationships between the various departments of the hospital, "to make the hospital more disease and infection free, efficient, practical and more environmentally acceptable for patients and staff alike."⁵

However, a well-designed master site plan cannot solve all the inherent problems resulting from the standard designs as they stand today.

Once the Hospital is built and functioning, its needs will evolve continually. Therefore every two years a re-evaluation should be made and any additional buildings or internal modifications should be integrated into the master site plan.⁶

"The Master site plans, once agreed (and amended if necessary) and approved, are to be used as standard control documents for all future development in specific hospitals. No further development should take place without full and due consideration, justifiable changes and formal approvals from local and regional sanitary authorities."⁷

This recommendation has to be complied with to maintain the coherence of the Hospital as a whole.

These buildings are being constructed to last. Their quality has to project to a standard of health service that Cambodia does not yet have, but will soon possess.

⁵ PIP annex 8 – Civil Works p 4

⁶ PIP annex 8 – Civil Works p 4

⁷ PIP annex 8 – Civil Works p 4

3. PHILOSOPHY OF SERVICE – USER BASED

The focus of all these efforts to improve health services in Cambodia should be directed towards the end-users, and the patients in particular, and all future civil works should be based on a thorough understanding of their needs.

Obviously the Hospital's main function is to provide reliable health care. But basic services such as readily available good quality food, sanitation and laundry facilities contribute to the general well-being of all end-users. How can staff be expected to guarantee a 24 hour service if there is no place for them to eat or rest? It has been well-established that providing food to tuberculosis patients is a motivating factor for them to stay in the Hospital for the full treatment. If the Hospital does not have the management capacity to handle such services as good quality food, laundry, waste disposal, maintenance of buildings and gardens it can envisage contracting them out to private companies. Initially, all necessary facilities should be provided for in the civil works.

Before even considering medical requisites, human beings, whether they be patients, staff, administrators or visitors to the hospital, all share three basic needs; shelter, hygiene and food. These basic needs should be satisfied before any other criteria.

The patient has to return to his rightful place in the hospital services and building design - i.e. the patient is the "centre", the main user of the hospital. The medical and administrative staff are there to serve the patient.

The improvement of design is an ongoing process. The quality of civil works is an important factor that will contribute to offering low-cost medical services and efficient buildings.

Therefore before finalising any design work, thorough knowledge about the patients, medical and administrative staff should be collected. Identifying the health provider (public or NGO) is another important factor to take into account as well as the presence of any additional services within the hospital (rehabilitation for example). The end-users must be consulted during the design process.

End-users can also prove an invaluable source of information about practical matters such as annual flooding, the presence of mines or ordnance or local building practices.

Three categories of end-users can be identified. They are:

3.1. The patient

The hospital has to provide the patient with a service and a space that can be appropriated, that is reassuring and where he feels considered and respected.

Dr Collins behavioural study⁸ underlines the necessity to take into account traditional views about medical treatment in Cambodia in which the patient's preference is holistic; comprising of physiological, psychological and sociocultural factors and not just specialist scientific factors. If these "customer preferences" are taken into account then the Hospital will be successful. If not, there is a real risk that people will continue to consult kru khmer and yiey mop rather than competent medical staff. The patient is the "raison d'etre" of all health facilities.

As stated⁹ patient care requires that:

- suitable provision for the personal comfort and safety of patients is made
- patient privacy and dignity are assured and protected

3.2. The staff, comprising medical, administrative and maintenance staff.

Identifying the different categories of staff, from the surgeon to the janitor, from the Hospital Director to the driver, from the Chief Nurse to the cook is necessary if we are to provide them with adequate space for their work. Here too the staff's real needs must be respected for them to work comfortably, efficiently and to remain motivated. If a 24 hour service is required, basic human needs such as shelter, food and a place to rest must not be forgotten. If staff are expected to wear clean uniforms then they require a place to change their clothes and to have them laundered. If maintenance of equipment is expected then a properly equipped workshop has to be provided.

The design of the hospital plays a supportive role in providing the staff with the right space for the right service. To function as a team and not a group of diverse services, the hospital needs to be designed to favour communications at all levels between members of staff.

For this second ADB/WB project, an ongoing effort to improve the Referral Hospital design is required, tending towards a more organic structured one. Pushing patients on trolleys hundreds of metres from one building to another is neither acceptable from the medical point of view nor is it cost effective.

Staff should be consulted not only for the valuable input they can make to the design but so that they recognize themselves in the "as-built" hospital. It is "theirs". They can appropriate it and use it to the full.

3.3. The patient's relatives and attendants

Traditionally in Cambodia, relatives accompany patients and take care of their clothes, food and general needs. The psychological support of attendants should not be underestimated. The equatorial climate facilitates the provision of

⁸ A Study of Health Seeking Behaviour in Kampong Chhnang, Cambodia, William Collins Phd 2000

⁹ CPA Guidelines for the Referral Hospital

adequate accommodation, at a minimum expense, for these valuable companions who contribute to patients' well-being and earlier recovery. As there is no specific budget to cover the cost of facilities for attendants, Hospitals should seek imaginative ways of satisfying their needs; by attributing an unused building as a shelter and providing ample sanitation and shower facilities. At the same time it is often necessary to have some rules about the number of relatives and attendants so as to avoid the hospital being 'invaded' by visitors.

4. STANDARD HOSPITAL DESIGN

There are many arguments in favour of standard hospital design:

- plans that are well understood by the MoH, that correspond to the CPA guidelines and with which health providers are familiar

- plans that do not need to be completely redesigned for each hospital with good cost control and lower civil works cost

- easier management and maintenance

However this does not mean that once an acceptable design has been reached there is no need to continue to improve it. Several problems are inherent to the existing standard plans of pavilion or modular type building:

- they tend to be designed on a 6 M grid structure into which the various functions do not necessarily fit conveniently

- there is bad circulation between different medical services

- they do not promote good human relations among the medical team

- there are unsatisfactory site plans with no connection between buildings

- there are high construction and maintenance costs due to the ratio of external walls (major works) to internal space, climate exposure etc.

- there is very low density that consumes a lot of land

- there is difficulty in maintenance of the site as a whole

There are also some advantages with the modular building.

- it is easy to add a new service to an existing hospital

- they reduce the risk of the spread of nosocomial germs

- they are easily accepted by rural society as they are a familiar style of building found in schools and other public services

Improvements on the existing pavilion style design can be made by better landscaping, taking more care in the general layout or master plan of the hospital, and connecting buildings with covered walk-ways. These solutions should be borne in mind. As regards new building or rehabilitation work, the latter tends to cost as much, if not more, than new building. Connecting badly located services with covered walk-ways not only costs a lot, is not necessarily effective in protecting people from gusty winds and monsoon rains, and consolidates a badly organized hospital in the long term. Therefore the choice to rehabilitate rather than rebuild new facilities should be carefully evaluated.

All in all the advantages of modular buildings are outweighed by the advantage of a complete redesign of the referral hospital, especially since the "Guidelines for the Referral Hospital Complementary Package of Activities" were finalized in February 2003.

The "Guidelines for the Referral Hospital" Feb 2003 Ministry of Health indicate in detail the services to be covered under each Complementary Package of Activities (CPA). The Minimum Package of Activities (MPA) should be provided within the Referral Hospital compound by locating an Outpatients Consultations Unit in such a way that 'walk-in' patients spontaneously go there.

The CWG has decided to centralize certain services that were previously dispersed throughout the hospital departments.

These are as follows:

- Outpatients
- Emergency and Major Surgery (including caesarian sections)¹⁰
- Laboratory tests¹¹
- Imagery¹²
- Laundering and Sterilisation¹³
- House-keeping¹⁴

By centralizing these specialized services, they will be:

- more efficient
- easier to maintain
- more cost effective both in the deployment of competent staff and the amount of equipment per hospital

These centralized services, in addition to other services delivered by the Referral Hospital, constitute a number of "core" functions that should be developed in a coherent standard design applicable for all new RH's.

¹⁰ refer to Annex 5 "Table of Functions and Facilities" 1. CLINICAL SERVICES 1.3. Surgical Services & Operating Theatre

¹¹ refer to Annex 5 "Table of Functions and Facilities" 2. PARACLINICAL SERVICES 2.1. Laboratory

¹² refer to Annex 5 "Table of Functions and Facilities" 2. PARACLINICAL SERVICES 2.4. Imagery

¹³ refer to Annex 5 "Table of Functions and Facilities" 4. TECHNICAL SUPPORT SERVICES 4.2. Laundry/Sterilisation

¹⁴ refer to Annex 5 "Table of Functions and Facilities" 4. TECHNICAL SUPPORT SERVICES 4..3. Housekeeping

4.1. Standard design for CPA 2 & 3 – CORE SERVICES¹⁵

A standard core design¹⁶ should be developed for the following basic functions (the numbering refers to the Table of Functions and Facilities in annex):

1. CLINICAL SERVICES

- 1.1. Outpatients Consultations
- 1.2. Emergency Department
- 1.3. Surgical Department & Operating Theatre

2. PARACLINICAL SUPPORT SERVICES

- 2.1. Laboratory
- 2.2. Pharmacy
- 2.4. Imagery (X-ray Echography)

4. TECHNICAL SUPPORT SERVICES

- 4.1. Kitchen/Catering
- 4.2. Laundry/Sterilisation
- 4.3. House-keeping
- 4.4. Waste Management

Instead of a collection of modular buildings corresponding to each separate function it is proposed that these core functions be designed as a whole concept. This should make the civil works more cost effective but, especially, by improving the efficiency of the Hospital function, it should contribute to a higher standard of health services.

This design should promote:

- good functionality between the various medical services
- teamwork amongst the Hospital staff
- cost efficiency due to intelligent civil works, lower maintenance costs and higher density

- long term reduction in maintenance costs of the site as a whole, thanks to lower civil works maintenance and energy consumption

- sufficient flexibility for future extension

¹⁵ The Ministry of Health intends that all CPA 1 Hospitals be progressively upgraded to CPA 2

¹⁶ see Annex CPA 2 & 3 Functional Diagram

4.2. Standard design for CPA 1 – CORE SERVICES

The CPA 1's main difference consists in the absence of Surgical services but the CWG has expressed the aim to progressively upgrade all CPA 1 RH's to incorporate this. Only 3 of the planned Hospitals in the WB PIP are CPA 1. A standard core building for CPA 1 should also be designed comprising the following functions allowing for the addition of Surgical Services at a later date:

1. CLINICAL SERVICES

- 1.1. Outpatients Consultations
- 1.2. Emergency Services

2. PARACLINICAL SUPPORT SERVICES

- 2.1. Laboratory
- 2.2. Pharmacy
- 2.4. Imagery (X-ray Echography)

4. TECHNICAL SUPPORT SERVICES

- 4.1. Kitchen/Catering
- 4.2. Laundry/Sterilisation
- 4.3. House-keeping
- 4.4. Waste Management

4.3. Other design work

Comparing the "Table of Functions and Facilities" in annex 5 with the existing plans reveals many discrepancies and argues for a complete review of the design of all the facilities. This should aim at simple functional design, built with easily maintained building materials that result in a cost effective Hospital both in the short and long term.

5. GENERAL CRITERIA AND PROJECT EVALUATION

Prior to any design work the following factors should be taken into account:

5.1. USERS

5.1.2. Consulting the end-users

The Provincial and Hospital Directors, medical team and any NGO's who may be implicated in services either under the CPA guidelines or as additional services should be consulted. The existing hospital should be visited and patients' needs taken into account as much as possible. The level of coverage and the availability of current and future human resources should be collated and used to complete the "Table of Functions and Facilities".

5.1.3. Identifying the health provider and phasing of works

The health provider¹⁷ has to be identified and consulted before commencing any design work. Depending on the existing state of the buildings the civil works have to be phased:

Phase 1 - demolition work, new building and landscaping

Phase 2 – demolition or rehabilitation of existing buildings

This will enable the Hospital to continue to function while the new buildings are under construction. After completion of the new buildings, the staff and patients can move to these and the old ones can either be rehabilitated or demolished.

In the case of refurbishment without new building, a prefabricated shelter should be used to house patients and staff during construction work.

5.2. LAND PROPERTIES

5.2.1. Size of land

With respect of World Health Organisation standards, a one hundred bed hospital requires 4 hectares of land. This is a minimum and corresponds to the hospital area only, exclusive of staff housing and other facilities. If possible it should be larger to allow for future extension.

Exceptionally, in cases where pressure for land is high, and only after approval from the Ministry of Health, a higher density of building may be authorized.

5.2.2. Accessibility and environment

The land should preferably be on a major road to ensure easy access by ambulances and located centrally in a service zone with a radius of about 25

¹⁷ in some cases the health provider is the Ministry of Health, in others it may be contracted out

km. Attention should be paid to the use of neighbouring land to avoid conflicts of usage. If possible it should be grouped with other institutional facilities such as schools. The land should be free from the danger of flooding and nuisances such as noise and pollution.

5.2.3. Site master plan

The site master plan has to be carefully studied aiming at an organically designed landscaped ensemble integrating water basins, trees, covered walkways, the best possible adaptation of existing buildings and integration of new ones. The orientation of the buildings will be chosen preferably with long facades facing north and south (for the least direct sunlight and good cross ventilation). Attention will be paid to improve the "user-friendliness" of the facilities by considering the circulation.

5.3. INFRASTRUCTURE

5.3.1. Infrastructure

The site should have telecommunications, mains electricity and water supply, or should be in an area where such services are planned in the near future. An abundant and high standard of water is particularly important. If such utilities are not available substitutes should be adequate (radio, generators and/or solar electricity, wells and/or rain tanks).

5.3.2. Electricity supply

This can be provided by mains electricity, electric generator and/or solar panels. All facilities should be provided with separate electrical circuits with high capacity cable and wiring. All highly equipped facilities (ICU, Operating Theatre, Labour room, Laboratory, Imagery etc. etc.) should have adequate electrical infrastructure for the equipment used with earthed plugs every 2 metres. In some cases this implies tri-phase. In all circumstances the electricity supply should be stable 220-240 V.

5.3.3. Water supply

Before envisaging the construction or refurbishment of a hospital the potential ground and surface water supply should be evaluated and tested. In Cambodia, it is practically inconceivable that insufficient water not be available due to the high rainfall in all areas. The hospital should have abundant clean cold water. Drinking water and water used for medical equipment may have to be treated or brought in from outside.

5.3.4. Waste disposal and waste water treatment

The design of the Hospital should take into account effective waste disposal, and waste water treatment with respect of environmental rules.

5.3.5. Telecommunications

Where possible provide fixed telephone lines, (one for internet connection¹⁸, another one for calls); if not, mobile phones. In remote areas provide radio phone for link up between hospital and health centres. This requires a 50M high mast equipped with an aerial and lightning conductor installed close to the emergency room.

5.4. BUILDINGS

5.4.1. Accessibility and signage for vehicles and externals

The Referral Hospital is to be accessible by ambulances with good signage in Khmer and English. The emergency unit should be easy to locate. Outpatients consultations should also be clearly signed.

5.4.2. Accessibility and circulation of people

All hospital buildings are to be accessible by handicapped people. This may require access ramps equipped with hand-rails and a maximum gradient of 5 degrees. All doors should be double, at minimum with one 90 cm and one 30 cm, totalling 1.20M. Emergency fire fighting vehicles must be able to approach all buildings. Fluid movement of patients should be guaranteed in all facilities. This requires wide corridors and doors and simple circulation. Separate accesses for staff and patients, ambulances and private vehicles should be taken into account as well as delivery vehicles of equipment and medical supplies.

5.4.3. Internal communications

An internal electronic communications system (or staff messenger) should be installed for medical staff but also an emergency call system for patients.

5.4.4. Signage of all facilities

Clear signage should facilitate locating services including labelling of all doors.

5.4.5. Climatic criteria

The whole of Cambodia has a hot equatorial climate with a Northerly hot dry monsoon half of the year and a Southerly hot wet monsoon the rest of the year. The mean temperature only varies 10 degrees from the average lowest to the average highest.

However, three distinct climatic zones can be distinguished:

¹⁸ it may be a good idea to install the internet connection in the library where it can provide access to website medical information

- the low-lying flood plain of the Mekong River that covers approximately 80% of the country

- mountainous regions such as Mondulkiri and Rattanakiri where the temperature can be considerably lower (up to 10 degrees less)

- the Southern coastal zone that is sometimes exposed to severe storms

Buildings should be designed to take into account these local climatic criteria using natural ventilation, shade, the best orientation (usually North/South), protection from heavy rain and knowledge of dominant winds for good ventilation. Knowledge of dominant winds is also important for locating isolation wards to avoid spreading germs. In regions exposed to storms, the roof structure should be calculated to take into account the wind factor. The minimum ceiling height will be 4M to guarantee comfortable natural ventilation at all times (maybe less in exposed coastal zones). All facilities will be designed for natural ventilation except where otherwise specified. In flood prone areas buildings should be elevated 2 metres from the ground to avoid seasonal flooding.

5.4.6. Sanitation

All facilities should be equipped with water based sanitation separate for staff and patients. Squat toilets should be provided and basins equipped with handfree taps. Wards should be equipped with showers and toilets. Latrines are not an acceptable form of toilet for a modern hospital.

5.4.7. Building materials

Locally produced building materials of an acceptable standard should be identified and used whenever feasible.

All facilities susceptible to be dirtied by contaminated waste or body fluids, (especially toilets, operating and delivery rooms, laboratory and sterilization unit) should have wall and floor finishes resistant to chemical attack and be equipped with floor sumps.

In no circumstances should internationally unacceptable materials be used (e.g. any composite material comprising asbestos). In the case of demolition works involving such materials they should be disposed of with respect of environmental rules and regulations and with regard to the precautions necessary to protect workers from contamination.

5.5. SERVICES

5.5.1. User-friendly – guest accommodation

The hospital should be user friendly and provide easy access for visitors and relatives, including temporary accommodation, protected places for cooking and

washing. Better still, an efficiently run canteen can provide food for all users, including passers-by. A small shop could provide toiletries and various articles.

5.5.2. Food for staff and patients

Good quality food should be supplied for patients, staff and visitors. In the case of TB treatment, providing food is an incentive for patients to respect the constraint of treatment lasting 20 - 30 days. In the case of staff readily available food can be vital to maintaining them in situ. A hospital restaurant located in a strategic central place can be both useful for providing meals to staff and visitors and function as a hub for informal communications that will improve the hospital teamwork.

5.5.3. Education

Education is an important support area and adequate education and training rooms should be provided in the plans. These can be strategically located and equipped with audio-visual material. A library for health literature should be provided. If possible an internet connection should be located in the library. Educational material can be exhibited for the general public in strategic locations such as the referrals consultation area.

5.5.4. Training

Meeting rooms that can also serve as "class-rooms" should be provided.

5.5.5. Technical support

Catering, house-keeping, centralized sterilisation and laundering should be organized so as to function effectively in the provision of food, cleaning, and supplies for all the Hospital. A manned workshop should be provided to maintain equipment and to do any everyday building repairs, install and move equipment to suit the medical requirements.

5.5.6. Administration

This can be divided into 2 different locations:

a) one in close contact with the public for patients records, cashiers etc., directly in proximity to admissions

b) one more private for hospital management – this does not need to be located in a central location

5.6. EQUIPMENT

5.6. Equipment

All facilities should be designed to take into account the specific requirements of medical equipment, as defined in the "Standard Equipment for the Referral Hospital", Health Services Department of the Ministry of Health – December 2003. Except where otherwise indicated in the "Table of Functions and Facilities" all equipment is mobile.

6. TECHNICAL DATA TO BE PROVIDED

The following is standard information to be provided to the Civil Works Group prior to preparing the complete design and tender documents.

6.1. Reference

Each facility will be given a reference number composed of the Provincial Number, the Operational District Number and the specific health facility number.

6.2. Site Information (see ANNEX 1 Location plan, showing the location of the health facilities in relation to village, town and road networks including the UTM facility coordinates)

6.2.1. SIZE OF LAND

According to WHO standards, a one hundred bed hospital requires 4 hectares of land. This is a minimum and corresponds to the hospital area only, exclusive of staff housing and other facilities. If possible it should be larger to allow for future extension. (refer to 5.2.1. above)

6.2.2. ACCESSIBILITY AND ENVIRONMENT

The land should preferably be on a major road to ensure easy access by ambulances and located centrally in a service zone with a radius of about 25 km. Where applicable, the project should be developed taking into account rural development and road construction projects. Attention should be paid to the use of neighbouring land to avoid conflicts of usage. If possible it should be grouped with other institutional facilities such as schools. The land should be free from the danger of flooding and nuisances such as noise and pollution.

6.2.3. INFRASTRUCTURE

The site should have telecommunications, mains electricity and water supply, or should be in an area where such services are planned in the near future. An abundant and high standard of water is particularly important. If such utilities are not available, substitutes such as wells must be feasible.

The following site information has to be completed for each individual facility:

- 1. physical description and land title
- 2. land use in adjoining areas
- 3. limitations of the site (water and electricity supply)
- 4. the presence of any landmines or unexploded ordnance, if necessary de-mining certificate
- 5. the presence of any ancient ruins or artefacts
- 6. maps of vicinity, landmarks
- 7. existing utilities
- 8. nearest city, port, airport
- 9. rainfall and data on weather and temperature

From the onset of the study the potential for the site should be evaluated. The Consultant responsible for civil works should report to the Ministry of Health if

the above conditions are not complied with, before going any further in the design process.

6.3. Site Survey (see ANNEX 2 Survey, showing the physical features of the site) The following information has to be completed for each individual facility:

- **6.3.1.** land boundaries, cardinal directions, GPS and topography, usage of neighbouring land
- **6.3.2.** existing buildings, infrastructure, vegetation and any other features, presence of water
- **6.3.3.** an evaluation of the potential reuse of existing buildings should be made. Buildings that cannot be rehabilitated as hospital facilities may be useful as garages, laundries, stores, temporary accommodation or workshops. If they are unsafe they must be demolished but it should be considered whether some of their building components can be recycled.
- **6.3.4.** information about flooding. A site with no apparent drainage problems when bare may be subject to serious flooding when developed if adequate provision is not made for disposal of rainwater.
- **6.3.5.** check soil conditions and resistance.

6.4. Hospital Operations (see ANNEX 3, Diagram showing the planned development)¹⁹

The size of the site in relation to the number of beds should be checked e.g. a 100 bed Hospital requires a site of 4 hectares (400M2 per bed). This is the hospital area only not including any staff housing. The diagram takes into account all the facilities described in the **"Table of functions and Facilities"** (SEE 6.6. below) as well as the following:

- 1. patient movement
- 2. staff movement
- 3. medical services
- 4. administration
- 5. accommodation for staff when applicable
- 6. vehicles movement
- 7. delivery of supplies
- 8. disposal of used goods
- 9. laundry services
- 10. food services
- 11. domestic services (electricity, water supply and disposal, refuse disposal)
- 12. security
- 13. engineering services
- 14. fire protection
- 15. emergency alarm systems

¹⁹ refer to CPA2 & 3 Functional Diagram in annex

16. security

6.5. Site plan (see ANNEX 4, Master Site Plan showing the planned development)²⁰

The site plan should be carefully studied to create an organically designed landscaped ensemble integrating water basins, trees, vehicle circulation, walkways, the best possible adaptation of existing buildings and integration of new standard buildings taking into account the tropical climate and dominant winds. Natural features of the site should be taken into account, especially any existing trees, water reservoirs or ponds, topography, roads and fences. The orientation of the buildings will be chosen preferably with long facades facing north and south (for the least direct sunlight). Infrastructure such as the location of sewage treatment, water supply, electricity supply and waste disposal should also be located. Landscaping features will be incorporated into the site plan and specifications.

Where possible future expansion (phasing) will be taken into account in the design of the master plan.

6.6. Table of functions and facilities (see ANNEX 5, showing commented schedule of accommodation with dimensions etc.)

This describes the building requirements to satisfy the services described in the "Guidelines for the Referral Hospital" February 2003. This is a quantitative table of functions and all the building facilities to be provided. It should be adapted to each specific Hospital for which civil works are programmed, either for rehabilitation or new construction. This table was designed by the Civil Works Group (CWG) of the MoH between July and October 2003. As specified in their meeting of 23.9.03 "the building brief must take into account the potential upgrading of each CPA category". As these evolve, as they will do, so should the building brief – and the table of functions and facilities.

Constraints such as specific activities, wheeled traffic, goods or material, special uses and work flow should be commented.

This table has been designed as a check-list or working document for discussions with end-users to determine the specific needs of each Hospital in view of completing the information.

Comments about the following constraints, where applicable, should be included in the table:

- 1. privacy, supervision, security, fire protection
- 2. environment, wind direction, lighting natural and artificial, heat humidity sterility, cold rooms, sound, ventilation
- 3. fixed and movable equipment

²⁰ refer to CPA2 & 3 Organization Chart in annex

- 4. electricity, water, ventilation and air-conditioning
- 5. flexibility and future extension

6.7. Preliminary design (see ANNEX 6, showing standard plans for the buildings, and where applicable sketch plans of buildings to be rehabilitated)

6.8. Cost of civil works and equipment

Approximate cost expectations should be indicated.

This information should be provided to the Civil Works Group of the Ministry of Health before proceeding further with the design of the Hospital.

CPA 2 & 3 FUNCTIONAL DIAGRAM





RH CPA 2 & 3 ORGANISATION CHART



		1. CLINICAL SERVICES									
						Mech	Air-		2	2	
1.1. OU	IPAI	IENTS CONSULTATIONS The referral consultation receives patients who are referred by the health centre	Staff	Patients	No	Vent	con	Spec Eq	M-	TOTAL M ²	
		for complementary diagnosis or for health problems that cannot be managed by the health centre. Referral consultation should be an autonomous service with its own staff.									
MPA & CPA		When a Health Centre (Minimum Package of Activities - MPA) is to be found in proximity to the Referral Hospital, the Outpatients of the RH only concerns 'referred' patients (Complementary Package of Activities - CPA guidelines). In this case, the Outpatients Department of the RH serves patients from District Health Centres and some 'walk-in' patients. When there is no Health Centre within proximity of the RH (at least 3 km) then the Outpatients also provides services within the MPA guidelines. Educational material can be exhibited for the general public in strategic locations such as the referrals consultation area and close to these facilities.									
СРА		Referrals come from District Health Centres, by ambulance. The access should be clearly signed from the entrance of the Hospital. Admissions are registered by the administration and primary examination and diagnoses of patients effected so as to direct them to the appropriate department.									
MPA & CPA					1				27		
MPA &		Reception area Administrative office with patients' records for admissions and departures (shared									
CPA MPA &	1.1.2.	with Emergency Services - see 1.2.2.) 12m2 + 20m2			1				32		
CPA	1.1.3.	Dispensary (pharmaceuticals supplied by 2.2. Pharmacy) Examination rooms (referred patients) 2 rooms can share a toilet and wash basin			1				10		
CPA	1.1.4.	(1 = 12M2)			2				24		
MPA & CPA	1.1.5	Consultations (ante and post-natal, preventive, chronic diseases, family planning, nutrition etc.) 2 rooms can share a toilet and wash basin (1 = 12M2)			4				48		
СРА	1.1.7.	Consultation - dental (dentist's chair and equipment) Each CPA has a different package of services for dentistry. The room requires to be sealed to accommodate x-ray equipment and to absorb any vibrations from the compressor used with the Dentist's chair that has to be located diagonally in the room. A corner equipped with a sink and a small autoclave for sterilisation should be provided.			1			fixed equipme nt	15		
MPA & CPA	1.1.6.	Consultations for paediatrics, for general health monitoring, parental education, ORT and ARI illnesses prevention. (2 consultations can share a toilet and wash basin)			1				12		
CPA 3	1.1.8.	Consultation - ophtalmology (2 consultations can share a toilet and wash basin)			1				12		
	1.1.9.	Consultation - mental health (2 consultations can share a toilet and wash basin)			1				12		
MPA & CPA	1.1.10.	Consultations for suspected TB patients (2 consultations can share a toilet and wash basin)			1				12		
MPA & CPA		Meeting room for group discussions for hygiene and health education of the general public (e.g. pregnant women)			1				20		
MPA & CPA	1.1.12.	Sanitary facilities patients (2 toilets with wash basins)			1				6		
	1.1.13.	Sanitary facilities staff (2 toilets with wash-basins)			1				6		
MPA & CPA	1.1.14.	Store - technical equipt & med supplies			1				10		
MPA & CPA	1.1.15.	Store - house-keeping			1				3		
		TOTAL NET SURFACE								249	
<u> </u>		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								49.8	
		TOTAL SURFACE - OUTPATIENTS									298.8

_		1. CLINICAL SERVICES									
1.2.	EMER	GENCY SERVICES DEPARTMENT	Staff	Patients	Beds	Mech Vent		Spec Eq	M ²	TOTAL M ²	
		The emergency medicine service provides a high standard of emergency care to those in the community who perceive the need for, or are in need of, acute care. This includes what is commonly known as "first aid".									
CPA 1, 2 & 3		This service requires fluid circulation and space that can be converted into cubicles when necessary with rapid access to the Operating Theatre, X ray, ICU and other departments. Provide "clusters" of beds for accidents, obstetrics, paediatrics for 24 hour services: triage, diagnoses, radiology and medical imaging, blood, pharmacy. Patients highly dependent on nursing should be close to the nursing duty room sustained with portable oxygen and monitoring equipment. It should have easy access to 1.3. Surgical Services (CPA 2 & 3 only) and the central sterile supplies, as well as to 1.6. Obstetrics. For CPA 1, it should be designed so that expansion into Surgical Services as in 1.3. can be realized in the near future.									
	1.2.1.	Ambulance arrival						vehicle access			
MPA & CPA	1.2.2.	Reception office with patients' records for admissions and departures (to communicate easily with 1.1.2.) and 24 hour a day telephone or radio communications with the Health District's Health Centres.							10		
	1.2.3.	Waiting area for attendants							12		
	1.2.4.	Space for stretchers and trolleys to transport patients to the right ward or surgery							20		
	1.2.4.	Space for triage respecting patient's privacy (preferably large room that can be							20		
	1.2.5.	divided into cubicles) with medical supplies and basins							24		
	1.2.6.	Patient preparation washing room with shower and 2 toilets							10		
	1.2.7.	Referral consultations medical examination room with toilet and wash-basin (accessible by trolleys)							16		
		First-aid and observation ward			4				36		
	-	Clean minor emergency operating block (with aseptic procedures & no anaesthesia) complete with changing-room, scrubbing up facilities for two staff and sluice (proximity to surgical operating block in 1.3. for CPA 2 & 3). Roof structure and ceiling design to take into account operating light-fittings. Design should guarantee positive air pressure and be equipped with an air-purifier.					yes	fixed equipme nt	50		
	1.2.10.	Instrument cleaning-up, washing-trap. Centralized autoclave and sterilisation room (shared with other services) - see 4.2.						fixed equipme nt	12		
		Resuscitation area to be designed so that specific medical equipment can be hung on the wall behind patients' beds			3			fixed equipme nt	25		
	1.2.12.	Toilets and showers for male and female staff							8		
	1.2.13	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room for 24 hour staff (to be shared with surgical services)							20		
	1.2.14.	Sanitary and shower facilities for staff (to be shared with surgical services)							8		
	1.2.15	Store - mobile equipment (easy access to operating theatre, double doors)							8		
		Store - technical equipment, laundry & medical supplies							12		
	1.2.17.	Store - house-keeping							3		
										274	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - EMERGENCY SERVICES DEPT								54.8	328.8

		1. CLINICAL SERVICES									
	SURG	ICAL SERVICES DEPARTMENT & OPERATING THEATRE	Staff	Patients	Beds	Mechve nt	Air- con	Spec Eq	M²	TOTAL M ²	
		Minor surgery can be performed at all referral hospitals. CPA 2 and CPA 3 hospitals will have major surgical capabilities. The intensive care unit will provide constant medical attention (with specialized equipment) to critically ill patients, such as to control bleeding, to support breathing, to control toxaemia and to prevent or address shock.									
CPA 2 & 3		The surgical unit should be accessible from the 4.2.2. Central sterile supplies, the 1.2. Emergency department and from 1.6. Obstetrics. It should be adjacent to the intensive care unit in a cul de sac with no through traffic. Direct access to 2.4. Imagery unit is required. The circulation of solled equipment and medical supplies should be separate from clean (linen, people, utensils) All operating rooms should have wall and floor finishes resistent to chemical attack.									
	1.3.1.	Consultation office for patients/relatives							12		
	1.3.2	Meeting room for pre-op medical staff							12		
	1.3.3.	Patient preparation room - pre-operation			1				10		
	1.3.4.	Aseptic Operating theatre (with anaesthesia) complete with changing rooms, scrubbing up facilities for two staff and sluice (proximity to emergency minor operating block in 1.2.9.) Roof structure and ceiling design to take into account operating light-fittings. Design should guarantee positive air pressure and be equipped with an air-purifier.					yes	fixed equipme nt	84		
	1.3.5	Instrument cleaning-up, washing-trap. Centralized autoclave and sterilisation room in 4.2.2.						fixed equipme nt	15		
								fixed equipme			
	1.3.6.	Patient recovery room - post-operation			3			nt	30		
		Intensive care unit (6 beds minimum to justify sophisticated equipment). The Intensive Care Unit is aseptic, highly equipped, and should be located adjacent to the operating block (1.3.4.). It is exclusively destined for critically ill patients who need constant medical attention. They come either from the operating theatre from wards or the admissions of the hospital. Patients who require long-term intensive care should be referred to a higher-level hospital.			6			fixed equipme nt	30		
	1.3.8.	Surgical ward for up to 50 patients per month, either under observation or post- operation treatment. Requires space for resuscitation equipment, oxygen etc. Nursing duty admin room with controlled drug storage and drug preparation areas.			10				90		
	1.3.9.	It can also be used as a meeting and rest room for 24 hour staff (to be shared with emergency services 1.2.13.)									
	1.3.10.	Sanitary and shower facilities for staff (to be shared with emergency services) with lockers and changing room							20		
	1.3.11.	Store - technical equipment, laundry & medical supplies							10		
	1.3.12.	Store - house-keeping							3		
		TOTAL NET SURFACE								316	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								63.2	
		TOTAL SURFACE - SURGICAL SURFACES DEPT									379.2

		1. CLINICAL SERVICES									
			Staff	Patients	Beds	Mech Vent	Air- con	Spec Eq	M ²	TOTAL M ²	
		see Mortuary 2.5.									
									2		
1.5.	GENE	RAL MEDICINE DEPARTMENT The Internal Medicine, or General Medicine, unit will provide care for medical	Staff	Patients	Beds	Mech V	Air-co	Spec Eq	M ²	TOTAL M ²	
		conditions for adults.									
CPA 1,		This ward should be divided up into several units - men/women - chronic/acute									
2&3		disease etc. Room 1			8				42		
		Room 2			8				42		
		Room 3			8				42		
	1.5.4.	Room 4			8				42		
	1.5.5.	Examination Room with hand-basin (accessible by trolleys)							12		
		Nursing duty admin room with controlled drug storage and drug preparation areas.							~~		
		It can also be used as a meeting and rest room. Staff toilets showers							20 8		
	-	Patients toilets and showers							8		
		Store - technical equipment, laundry & medical supplies							10		
		Store - house-keeping							3		
		TOTAL NET SURFACE								233	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								46.6	
		TOTAL SURFACE - GENERAL MEDICINE DEPT									279.6
1.6.	OBST	ETRICS (& GYNAECOLOGY DEPARTMENT)	Staff	Patients	Beds	Mech Vent	Air- con	Spec Eq	M ²	TOTAL M ²	
		The obstetrics service is responsible for the provision of good quality curative									
		care and delivery for all women, health education on lactation management,									
		family planning, nutrition, newborn care.									
CPA 1,		CPA 1 is equipped for an estimated 1.000 deliveries p.a. CPA 2 & 3 have over 2.000 deliveries p.a. Ambulance access should be provided. This department ensures 24 hour service. The delivery rooms practice aseptic procedures and should be next to the labour and recovery rooms, with direct access to the newborn care unit. This service should be separate from gynaecology. It has easy access to the operating theatre and intensive care unit (surgery), a newborn care unit, neonatal resuscitation equipment weighing equipment and measures. Also easy access to X ray and echography and ECG. Ante natal policy in "outpatients". Delivery rooms should have wall and floor finishes resistent to									
2&3		chemical attack. Examination room with toilet and wash-basin accessible by trolleys							12		
		Consultation room for family planning, hygiene, nutrition and counselling							12		
		Mid-wives and nurses duty admin room with controlled drug storage and drug									
		preparation areas. It can also be used as a meeting and rest room. Should be							~~		
		close to the labour and newborn care unit. Labour room with cubicles and wash-basin, direct access to a toilet. Close to duty							20		
		room.			3				20		
CPA 2 & 3	1.6.5.	Clean delivery room (with aseptic procedures) divided into 2 parts;"difficult" and "normal" deliveries, with changing room, scrubbing up facilities for two staff and sluice (no anaethesia, easy access to surgical operating block in 1.3. for CPA 2 & 3) Caesarian sections and surgical operations treated in 1.3. Surgical Services for all CPA's. Roof structure and ceiling design to take into account operating light- fittings. Design should guarantee positive air pressure and be equipped with an air-purifier.							50		
		Instrument cleaning-up and washing-trap. (4.2. Centralized autoclave and	1								
		sterilisation room)							15		
		Neo-natal examination room with cupboard for supplies (resuscitation, post delivery care, bathing, etc.) direct access from deliveries							15		
		Recovery room. Access from Delivery Room.			2				12		
		Maternity ward			20				80		
	1.6.10.	Waiting/rest room for fathers & relatives							12		
		Staff toilets showers							8		
		Patients' toilets, showers and baby-baths							12		
		Store - technical equipment, laundry & medical supplies							10		
		Store - house-keeping							3		
		TOTAL NET SURFACE		<u> </u>						281	
	1	ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION	1	1	i	1				56.2	

		1. CLINICAL SERVICES									
	-					Mech	Air-		2	2	
1.7.	GYNA	ECOLOGY (& OBSTETRICS DEPARTMENT)	Staff	Patients	Beds	Vent	con	Spec Eq	M²	TOTAL M ²	
		The gynaecology service is responsible for the provision of good quality curative care.									
CPA 1, 2 & 3		This ward should be separate from obstetrics. CPA 1 treats miscarriage, haemmorage, infections etc. CPA 2 & 3 treats medical and surgical cases. Should be easily accessible from Surgical Unit.									
CPA 1 CPA 2	1.7.1.	Ward			10				40		
& 3	1.7.2.	Ward			20				80		
	1.7.3. 1.7.4.	Examination room with hand-basin and toilet. Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room.							12 20		
	1.7.5.	Staff toilets showers							8		
	1.7.6.	Patients toilets and showers							12		
	1.7.7. 1.7.8.	Store - technical equipment, laundry & medical supplies Store - house-keeping							10 3		
	1.7.0.	TOTAL NET SURFACE							3	185	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								37	
		TOTAL SURFACE - GYNAECOLOGY DEPT									222
						Mech	Air-				
1.8			Staff	Patients	Beds		con	Spec Eq	M ²	TOTAL M2	
		The Paediatrics Unit will provide care for neonates and children, and health education for parents. It should be as convivial as possible to take into account the scale and comfort of children.									
CPA 1, 2 & 3		All beds should be adult beds to allow for mothers to lie with their children and care for them. The isolation rooms should be carefully located to avoid contact with other patients.									
	1.8.1.	Ward for 0 - 1 years			5	L			25		
CPA 1	1.8.2.	Ward for 2 - 5 years			6				30		
CPA 1	1.8.3.	Ward for 6 - 16 years			6				30		
CPA 2 & 3	1.8.4.	Ward for 0 - 1 years			7				35		
CPA 2 & 3	1.8.5.	Ward for 2 - 5 years			10				40		
CPA 2 & 3					10				40		
& 3	1.8.6.	Ward for 6 - 16 years			10				40		
	1.8.7.	Newborn care unit, aseptic, with 2 incubators and sink (non accessible except for staff) equipped with glass screen for parental viewing. Close to Duty room.			2				10		
CPA 2 & 3	1.8.8.	Isolation rooms for infectious diseases complete with resuscitation equipment and hand-basin			3				15		
	1.8.9.	Examination room with hand-basin Nursing duty admin room with controlled drug storage and drug preparation areas.							12		
	1.8.10.	It can also be used as a meeting and rest room.							20		
	-	Relaxation corner for child play and parent education about nutrition and hygiene Child washing area							12 8		
		Staff toilets showers							8		
	-	Patients' attendants toilets and showers							12		
		Store - technical equipment, laundry & medical supplies							10		
	1.8.16.	Store - house-keeping TOTAL NET SURFACE							3	310	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								62	
		TOTAL SURFACE - PAEDIATRICS DEPT					1				372
1.9.	INFE	CTIOUS DISEASES DEPARTMENT	Staff	Patients	Beds	Mech Vent	Air- con	Spec Eq	M ²	TOTAL M ²	
		This department, is responsible for curative care for tuberculosis patients, health									
		promotion on tuberculosis and testing as well as other diseases such as malaria, dengue etc. In CPA 3, this service can be looking at broader illnesses of the									
		lung, in other words it can be a pneumology service. Due to the lengthy duration									
		of treatment patients should be provided with space for relaxation.									
		Infectious Diseases/Tuberculosis ward – 20 – 50 beds – TB testing to be done in the Hospital Laboratory. The location of this department should be carefully									
		considered so as to clearly separate these contagious patients from others									
CPA 1,		without ostracizing them. The dominant wind should be taken into account in the									
2&3	1.9.1.	location of this ward to avoid propagation of germs. Ward - divided into 4 sub-wards each with a hand-basin			32	-			180		
	1.9.1.	Examination room with hand-basin			52				12		
		Isolation room for extremely contagious patients equipped with resuscitation									
	1.9.3.	equipment Nursing duty admin room with controlled drug storage and drug preparation areas.			3				15		
	1.9.4.	It can also be used as a meeting and rest room.							20		
	1.9.5.	Relaxation room for patients "on the mend"							15		
	1.9.6.	Staff toilets showers							8		
	1.9.7.	Patients toilets and showers				<u> </u>			12		
	1.9.8. 1.9.9.	Store - technical equipment, laundry & medical supplies Store - house-keeping				<u> </u>			10 3		
		TOTAL NET SURFACE				-			Ŭ	275	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								55	
		TOTAL SURFACE - TUBERCULOSIS									330

CPA 1, 2.1. LABO 2.1. LABO 2.1. 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.1.6. 2.1.1. 2.1.4. 2.1.5. 2.1.6. 2.1.1. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.6. 2.1.5. 2.1.6. 2.1.5. 2.1.6. 2.1.5. 2.1.6. 2.1.5. 2.1.6. 2.1.6. 2.1.5. 2.1.6. 2.1.5. 2.1.6. 2.2.0 2.0	The laboratory service is organised and administered to provide high quality clinical laboratory and diagnostic services appropriate to the clinical services provided by the facility: the microbiological, haematological, and biochemical investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services. Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Offlice Medical examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	2 to 10 2 to 10 10 1 10 10 10 10 10 10 10 10 10 10 1	No.	Mech Vent yes yes yes yes yes	Air- con yes yes yes	Spec Eq	M ² 60 12 10 10 6 8	TOTAL M ²	
CPA 1, 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2.8.3 2.2. PHAR CPA 1, 2.8.3 2.2. PHAR 2.2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR	The laboratory service is organised and administered to provide high quality clinical laboratory and diagnostic services appropriate to the clinical services provided by the facility: the microbiological, haematological, and biochemical investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services. Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Offlice Medical examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	2 to 10	No.	yes yes yes yes yes	yes	fixed	60 12 10 10 6	TOTAL M ²	
CPA 1, 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2.8.3 2.2. PHAR CPA 1, 2.8.3 2.2. PHAR 2.2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR	The laboratory service is organised and administered to provide high quality clinical laboratory and diagnostic services appropriate to the clinical services provided by the facility: the microbiological, haematological, and biochemical investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services. Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Offlice Medical examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	2 to 10	No.	yes yes yes yes	yes	fixed	60 12 10 10 6		
CPA 1, 2 & 3 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 2.2. PHAR CPA 1, 2 & 3 2.2. PHAR 2.2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHA	clinical laboratory and diagnostic services appropriate to the clinical services provided by the facility: the microbiological, haematological, and biochemical investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services. Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.		No.	yes yes Mech		equipme	12 10 10 6		
CPA 1, 2 & 3 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.2. 2.2	provided by the facility: the microbiological, haematological, and biochemical investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services. Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY		No.	yes yes Mech		equipme	12 10 10 6		
CPA 1, 2 & 3 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.1.6. 2.1.6. 2.1.6. 2.1.1. 2.1.1. 2.1.1. 2.1.2. 2.1.1. 2.1.3. 2.1.4. 2.1.4. 2.1.4. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.4. 2.1.5. 2.1.5. 2.1.6. 2.1.5. 2.1.6. 2.2.7. 2.2.7. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.2.3. 2.3. 2.3. 2.3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services. Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.		No.	yes yes Mech		equipme	12 10 10 6		
CPA 1, 2 & 3 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 CPA 1, 2 & 3 2.2. 2.2. 2.2. 2.2. 2.2. 2.2.3. 2.3.	Aims to operate 24 hours/day. The source of water should be checked for compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.		No.	yes yes Mech		equipme	12 10 10 6		
CPA 1, 2 & 3 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 2.2. PHAR CPA 1, 2 & 3 2.2. 2.2. 2.2. 2.2.3. 2.2.4. 2.2.5. 2.5.5. 2.2.5. 2.5.5. 2.5.5. 2.5.5. 2.5.5.5. 2.5.5.5.5	compatibility with medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY WMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.		No.	yes yes Mech		equipme	12 10 10 6		
CPA 1, 2 & 3 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 2.2. PHAR CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.2.3. 2.3. BLOO	clinical pathology, microbiology). Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY RMACY		No.	yes yes Mech		equipme	12 10 10 6		
2 & 3 2 & 3 2 & 1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.1.6. 2.1.6. 2.1.6. 2.1.1. 2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.2. 2.1.3. 2.1.4. 2.1.2. 2.1.3. 2.1.4. 2.1.2. 2.1.3. 2.1.4. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.2.0. 2.2.1. 2.2.2. 2.2.3. 2.2.3. 2.2.3. 2.3. 2.3. 2.3. 2.3. 2.3. 3. 2.3. 3. 2.3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	Theatre. Access should be well ventilated and sunny to ensure clean air. Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.		No.	yes yes Mech		equipme	12 10 10 6		
2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2.8.3 CPA 1, 2.8.3 2.2.1. 2.2.2. 2.2.3. 2.2.3. 2.2.3. 2.3. BLOO	Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.		No.	yes yes yes		equipme	12 10 10 6		
2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.2.7.2.7	areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY RMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	yes yes yes		equipme	12 10 10 6		
2.1.1. 2.1.2. 2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR 2.2. PHAR CPA 1, 2.8.3 2.2. PHAR 2.2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2. PHAR 2.	and hot-air oven. TB microscope should have good source of natural light. TB smear preparation room with counter and window giving onto the public circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY EVery referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	yes yes yes			12 10 10 6		
2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 2 & 3 2 & 3 2 & 3 2 & 2.1. 2.2.2. 2.2.3. 2.2.3. 2.3. BLOO	circulation for staff to hand in samples. Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY EVery referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	yes	yes		10 10 6		
2.1.3. 2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 2 & 3 2 & 3 2 & 3 2 & 2.1. 2.2.2. 2.2.3. 2.2.3. 2.3. BLOO	Office Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY EVery referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	yes	yes		10 10 6		
2.1.4. 2.1.5. 2.1.6. 2.1.6. 2.2. PHAR CPA 1, 2 & 3 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.2.3. 2.3. BLOO	Medical examination room Toilets for patients (1 men, 1 women) accessible from examination room Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY RMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	Mech	yes		10 6		ļ
2.1.6. 2.2. PHAR CPA 1, 2 & 3 CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	Store TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY EVery referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	Mech	yes				1
CPA 1, 2 & 3 CPA 1, 2 & 3 2 & 3 2 & 3 2 2.2.1. 2 .2.2. 2.2.3. 2.3. BLOO	TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY RMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.	Mech	yes		8		
CPA 1, 2 & 3 CPA 1, 2 & 3 2 & 3 2 & 3 2 & 3 2 & 2 2 & 3 2 & 2 2 & 2 2 & 2 2 & 2 2 & 3 2 & 3 2 & 2 2 & 3 2 & 2 3 & 3 2 &	ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION TOTAL SURFACE - LABORATORY RMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.						
CPA 1, 2 & 3 2 2 2.1. 2 2.2. 2 2.3. 2.3. BLOO	TOTAL SURFACE - LABORATORY RMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.					106	
2.2. PHAR CPA 1, 2 & 3 2 2 3 2 2.1. 2 .2.2. 2 .2.3. 2 .3. BLOO	RMACY Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.					21.2	127.2
CPA 1, 2 & 3 2 & 3 2 2.21. 2 .2.3. 2.3. BLOO	Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	No.						121.2
CPA 1, 2 & 3 2 & 3 2 2.21. 2 .2.3. 2.3. BLOO	Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.	Staff	NO.		Air-	0	M ²	TOTAL M ²	
CPA 1, 2 & 3 CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.			Vent	con	Spec Eq	IVI-	TOTAL M	
CPA 1, 2 & 3 CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.								l I
CPA 1, 2 & 3 CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility.								l I
CPA 1, 2 & 3 CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	promotes effective health care and inspires confidence in the health facility.								l I
2 & 3 CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO									l I
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	Good inventory control makes ordering and drug management easier.								l I
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO									
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO									l I
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. 2.3. BLOO	Also see 1.1.3. Dispensary, 4.6. Warehouse Storage and nursing duty rooms The pharmacy is supplied on a daily basis from the Hospital Warehouse an								1
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. 2.3. BLOO	redistributes supplies to the Hospital Departments. Storage for pharmaceuticals								1
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. 2.3. BLOO	fluids, medical supplies, equipment and miscellaneous – with temperature < 3 (preferably air-conditioned dust-free room) with thermometers for temperatur								1
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. 2.3. BLOO	control, humidity control. Refrigerator for vaccines, blood products, diagnosti	с							l I
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. 2.3. BLOO	testing equipment and some drugs, special conditions for storage of X ray film secure, with stable electrical supply, clean water, equipped with shelving and air								l I
CPA 1, 2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	compressor for equipment cleaning. Aims at 24 hour service. To guarante	е							1
2 & 3 2.2.1. 2.2.2. 2.2.3. 2.3. BLOO	correct dispensing provide locked night cabinet with minimum amount of drugs for emergencies. Provide necessary space for the admin of the pharmacy. Shoul								1
2.2.2. 2.2.3. 2.3. BLOO	be easily accessible from the Operating Theatre.	~							1
2.2.3.	Dispensary for medical supplies to Hospital departments only.		1				10		
2.2.3.	Pharmacist's office (not partitioned from 2.2.1.) Pharmaceutical Store, secure, equipped with work table, sink and refrigerator		1				12		
2.3. BLOO	(blood products, vaccines, drugs etc)		1	yes	yes		18		l I
2.3. BLOO	TOTAL NET SURFACE ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION							40 8	
2.3. BLOO	TOTAL SURFACE - PHARMACY		 -					0	48
					1	1			
	OD FACILITY (CPA 3 only - separate building)	Staff	Beds	Mech Vent	Air- con	Spec Eq	M2	TOTAL M ²	
									1
	Every Referral Hospital should be provided with adequate blood transfusion								I
	services. Blood services are adapted with the particular level of CPA provided by	'							I
	the RH: in hospitals with CPA2 with less surgical activity (eg 10 or less blood transfusions per month) and when geographical circumstances allow it (less than								I
	1 hour time-distance form next provincial blood transfusion centres) these								I
									I
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis.	1		1					
	services could be limited to the level of "blood-depot" (such as is provided for								I
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be								I
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	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be	_	-	L			12		I
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room	1	2				12 12		
2.3.3.	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room Medical examination and blood taking		2			fixed	12		
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room					equipme	.		I
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room Medical examination and blood taking Rest room for donors Laboratory with blood bank and refrigerators equipped with external thermal			yes		nt	24 9		
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room Medical examination and blood taking Rest room for donors Laboratory with blood bank and refrigerators equipped with external thermal captors		_	yes			9		. <u></u>
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room Medical examination and blood taking Rest room for donors Laboratory with blood bank and refrigerators equipped with external thermal				1		-	78 15.6	
	services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis. This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to the other services of the Referral Hospital (2.3.42.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility) Waiting room Medical examination and blood taking Rest room for donors Laboratory with blood bank and refrigerators equipped with external thermal captors Storage								

		2. PARACLINICAL SUPPORT SERVICES									
2.4.	IMAG	ERY	Staff	No	1	Mech Vent	Air- con	Spec Eq	M2	TOTAL M ²	
		Every referral hospital should have a Medical Imaging Service with an X-ray unit and when possible an ultra-sound unit. It should be easily accessible from the Emergency and Surgical Departments. Appropriate selection of imaging methods and correct interpretation are done in consultation with concerned medical consultants. This service should adhere to radiation safety principles relating to both patients and staff safety. X-rays are the first choice of imaging quipment.									
		Dom patients and star safety. X-rays are the first choice of imaging equipment. The radiographs are recorded on well preserved X-ray film. X-rays can image the lungs, skeleton, kidneys, gall-bladder and bowel. X-rays use ionizing radiation, with potential risk to personnel and patients. Ultrasound shoud be the additional imaging equipment. Ultrasound cannot image the lungs or skeleton but it is of greatest importance in obstetrics and for imaging the liver, kidneys, pancreas, gall- bladder and pelvic contents. Ultrasound carries, as far as is no known, no risk to patients or personnel.									
CPA 1, 2 & 3		This service, manned by at least one medic and one technician, should have easy covered access for wheel-chairs, patient trolleys and beds - preferably close to the emergency room. Proper electrical power is required. It comprises an X ray and echography room plus X ray dark room and office, storage space for mobile X ray equipment (eg during surgery), hand-washing and toilet.	2								
								fixed equipme			
	2.4.1.	X Ray Room (air-tight with protective masonry, double metal doors, no windows)				yes	yes	nt	30		
	-	Observation post for technician with plate-glass screen							8		
	2.4.3.	Dark Room equipped with aspirator, image storage cabinet and sink						fixed	8		
	2.4.4.	Echography Room with desk, examination bed and echography				yes	yes	equipme nt	12		
		Consultation room							10		
	_	WC for patients (echography)							2		
	2.4.7. 2.4.8.	Storage space forone-year imagery archives Storage space for mobile equipment (kept in Emergency unit)							10 0		
	2.4.0.	TOTAL NET SURFACE							U	80	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								16	
		TOTAL SURFACE - IMAGERY									96
						Mech	Air-				
2.5.	MOR	TUARY	Staff	Beds		Vent	con	Spec Eq	M ²	TOTAL M ²	
		The Mortuary will be kept to a standard that is acceptable in terms of hygiene and dignity of the dead, and that is unobtrusive to patients in general.									
CPA 1, 2 & 3		This should be sited on the periphery of the hospital grounds, preferably close to the gate, with easy covered access by vehicles and a visitors waiting/viewing room. The building should be designed with a small landscaped garden and hedge to create intimacy. CPA 3 Referral Hospitals only practise autopsies and require refrigerated body store, staff changing space with showers and toilets, autopsy room, cleaning materials storage room, and easy access to incinerator.									
CPA 1, 2 & 3	2.5.1.	visitors waiting/viewing room, divided into 2 partitioned areas		2					15		
CPA 3	2.5.2.	refrigerated body store (4.50 large x 7.00 with double doors)		1				fixed equipme nt	32		
CPA 3	2.5.3.	staff changing space with toilets and showers						fixed	10		
CPA 3	_	autopsy room with autopsy table and sink		1				equipme nt	15		
CPA 3 CPA 1,		storage room with cleaning facilities for equipment							8		
		cleaner's room							8		
		TOTAL NET SURFACE								88	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION			_					17.6	
		TOTAL SURFACE - MORTUARY									105.6

		3. ADMINISTRATIVE SUPPORT AREAS								
										1
					Mech	Air-				
.1. AD	MINIS	TRATION	Staff		Vent	con	Spec Eq	M2	TOTAL M ²	•
		Management should organize and manage the resources allocated to the hospital to achieve the best possible quality of patient care. This concerns both the material and human resources. The orgoing maintenance, attribution and good- use of equipment and buildings, as well as efficient human resources management, staff coordination and training are important contributory factors to the efficiency of the hospital.								
CPA 1, 2 & 3		Part of the administrative staff should be located in the referral admissions area to handle patients' records and health care charges. The main management staff of the Hospital need not be located in direct contact with medical facilities.								
		Lobby for informal receptions and visits of large groups (e.g. stakeholders) with								
	3.1.1.	receptionist	1					50		
	3.1.2.	Offices for administrative staff (Director, Vice-Director and Unit Chiefs)	3					25		
	3.1.3.	Office Clinical Director	1					12		
	3.1.4.	Offices for senior medical and nursing staff	7 to 8					50		
	3.1.5.	Staff and tea room with kitchenette (sink unit)						30		
	3.1.6.	Meeting room for staff meetings, and management committees						50		
	3.1.7.	Sanitary facilities, showers and toilets for staff with changing rooms and 100 lockers						50		
	3.1.8.	Archives for "one year" records, if possible computerized (in admissions office see 1.1.2.)								
	3.1.9.	Archives for *2-5 year" records - see 4.7.(equipped with four 5M rows of suspended files) and imagery records						60		
		TOTAL NET SURFACE							327	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION							65.4	
		TOTAL SURFACE - ADMINISTRATION								392.4
.2. TR		G (CPA 3)	Staff		Mech Vent	Air- con	Spec Eq		TOTAL M ²	
CPA 3		It is important to provide education and training rooms in the plans. These can be strategically located and equipped with audio-visual material. A library for health literature should be provided. If possible an internet connection should be located in the library.								
	3.2.1.	Training room for 30-40 people						50		
	3.2.2.	Small library for medical books and maintenance manuals of medical equipment						15		
	3.2.3.	Toilets						8		
	3.2.4.	Storage for projection and video equipment						6		
		TOTAL NET SURFACE							79	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION							15.8	
		TOTAL SURFACE - TRAINING								94.8
3.3. EC CPA 1, 2 & 3	UCAT	ION Educational material can be exhibited for the general public in strategic locations such as the referrals consultation area and close to these facilities (see 1.1. Outpatients Consultations).								
	1									

		4. TECHNICAL SUPPORT SERVICES These services require easy access by vehicles. They are an important									
		contributor to the good running of the Hospital. Providing specific facilities will									
		encourage their implementation.				Mech	Air-				
.1.	кітсі	HEN/CATERING	Staff			Vent	con	Spec Eq	M²	TOTAL M ²	
		The referral hospital supplies meals to the patients. The kitchen should prepare									
		hygienic and nutritious meals for patients and staff. A kitchen should be available									
		for the patients' families and be convenient and secure. The canteen can be a									
		hub for informal meetings of staff and contribute to their well-being when on duty for long periods of time.									
		This service can be contracted out if necessary. A high standard of food should									
		be maintained. This can be an incentive for some patients to remain hospitalized									
		for the full duration of treatment for tuberculosis as an example. A convivial									
		place, or canteen, to eat and drink is important for staff who spend long hours in									
74.4		the Hospital. It is also conducive to good relations and informal professional									
PA 1, & 3		exchanges. The canteen should be visible to outside customers and located as a focus point.									
		Kitchen area – for preparation of meals for staff and patients (though often									
	4.1.1.	supplied by visitors)							35		
	4.1.2.	Kitchen store							20		
	4.1.3.	Canteen to seat 50 - for all hospital users can be an external "sala"							100		
	4.1.4.	Space for food trolleys for meal delivery							12		
	4.1.5.	Toilets and wash basins for kitchen staff							8		
	4.1.6.	Waste disposal							4		
		TOTAL NET SURFACE								179	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								35.8	
		TOTAL SURFACE - KITCHEN AND CATERING									214.
12		IDRY & STERILISATION	Staff			Mech Vent	Air- con	Spec Eq	M ²	TOTAL M ²	
*.2.	LAUN	DRT & STERIES ATION	Stall			voin		Sher Ed			
		Although many hospitals do not have bed linen at present, the situation can but									
		improve over years to come. Uniforms, medical gowns and patients' gowns for									
		operations, clearly require proper cleanliness. Dirty and clean laundry use									
		separate containers and any contaminated material (body fluids, infectious									
		patients) should be identified and treated separately.									
		This service can be contracted out if passagers. A high standard of loundering is									
		This service can be contracted out if necessary. A high standard of laundering is necessary to ensure aseptic standards for surgical gowns, towels and bed linen (if									
		any). Clothes washing should in no event be mixed up with bathrooms and									
PA 1,		toilets. This is not compatible. An external clothes washing area can be provided									
& 3		for visitors and attendants.									
		Laundry – equipped with clothes washing tubs and washing machines (provide						fixed			
		plumbing for at least 2 heavy duty washing machines) guaranteeing sterilisation of						equipme	~~		
	4.2.1.	sheets, towels and gowns Centralized sterilisation unit: sterilisation equipment, equipped with one 90 litre						nt	30		
		capacity high pressure steam steriliser to work with both gas and/or electricity.									
		Preparation of sterile supplies to emergency, surgery and maternity services						fixed			
PA 1,		complete with water supply and sink. (CPA 3: two 90 litre capacity high pressure						equipme			
83	4.2.2.	steam sterilisers)						nt	20		
		Storage for clean laundry and supplies (each Dept has its own laundry and							20		
	4.2.3.	garments identified by tags)				yes			20		
	4.2.4.	External well-exposed shed for drying washing							40		
	4.2.5.	Space for dirty and clean carts for delivering laundry TOTAL NET SURFACE							12	00	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								82 16.4	
		TOTAL SURFACE - LAUNDRY & STERILISATION						1			98.4
							-	1			
			I	1	1	Mech	Air-	1		I	I
1.3.	HOUS	SE-KEEPING	Staff			Vent	con	Spec Eq	M2	TOTAL M ²	
I											
		The most important factor contributing to a good standard of hygiene, is good hospital design. This implies good spatial design, separate circuits for staff and									
		patients, dirty and clean supplies, easy waste disposal. It also means easily							[
		cleaned finishes have been chosen for all building surfaces									
								1			
		A high standard of cleaning of all hospital facilities is necessary and the staff for							[
				1	1		1	1			
		this work should be provided with adequate space for storing cleaning equipment									
ΡΑ 1		this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but									
		this work should be provided with adequate space for storing cleaning equipment									
PA 1, 2 & 3	4.3.1.	this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but stocks of supplies and electrical cleaning equipment will be kept here. The laundry, sterilisation and house-keeping can be grouped together.							12		
	4.3.1.	this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but stocks of supplies and electrical cleaning equipment will be kept here. The laundry, sterilisation and house-keeping can be grouped together. Space for storage of cleaning equipment and cleaning products							12		
	4.3.1. 4.3.2.	this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but stocks of supplies and electrical cleaning equipment will be kept here. The laundry, sterilisation and house-keeping can be grouped together. Space for storage of cleaning equipment and cleaning products Rest room for house-keeping staff with toilet and shower							12 20	32	
		this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but stocks of supplies and electrical cleaning equipment will be kept here. The laundry, sterilisation and house-keeping can be grouped together. Space for storage of cleaning equipment and cleaning products								32	
		this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but stocks of supplies and electrical cleaning equipment will be kept here. The laundry, sterilisation and house-keeping can be grouped together. Space for storage of cleaning equipment and cleaning products Rest room for house-keeping staff with toilet and shower TOTAL NET SURFACE								<u>32</u> 22.8	54.8

	1	4. TECHNICAL SUPPORT SERVICES	1	i							
1.4.	WAS	TE MANAGEMENT	Staff					Spec Eq	M ²	TOTAL M ²	
		The management of waste should be designed to reduce the risk of infection to									
		both patients and staff. This system will be an integral part of the facility's									
		infection control programme. For efficiency, the flow of hazardous and non									
		hazardous waste should be carefully studied so that it does not have to travel									
		large distances within the hospital.									
		large distances within the hospital.									
		It is necessary to segregate hazardous waste from non hazardous by having									
		separate easily identifiable containers. Non-hazardous waste comprises bio-									
		degradables that should be put into red bags and incincerated in the RH									
		incinerator. Hazardous waste comprises of 2 categories: 1. any infectious									
		contaminated material from clinical services, objects soiled by body fluids, human									
		tissues, laboratory waste including post mortem. This should be put into black									
		bags and incinerated on the premises. 2. sharps in safety boxes,									
		pharmaceuticals and chemicals should be put into special bags and taken to a									
PA 1,		Provincial site for destruction in SICIM incinerator at + 800 celsius. Non-toxic									
2&3		waste can be disposed of through land-fill as long as this is correctly managed. Incinerator - to be provided on the periphery of the hospital grounds with easy									
	4.5.1.	vehicle access and a discreet location									
	4.5.1.	Sharps are hazardous and should be disposed of into safety boxes that can be					-				
		collected and disposed of through incineration. Each Province has 2 or 3 SICIM									
	4.5.2.	incinerators where hazardous waste can be destroyed.									
	4.0.2.	Enclosure with tanking for waste storage before disposal - toxic and non toxic (no									
	4.5.3.	contaminated water should filter into the ground)									
									New		
4.5	GARA	ACE.	Staff			Mech Vent	Air- con	Spec Eq	build	TOTAL M ²	
4.J.	GARA	GE	Stall	1		vent	con	Spec Eq	ing		[
		All Referral Hospitals must have at least two vehicles: - an ordinary car for									
		general purposes - an ambulance in good condition for specific medical									
		transportation that is on stand-by 24 hours a day									
PA 1,		These services obviously require easy access for vehicles and can be located on					1				
2 & 3		the periphery of the site.									
	4.6.1.	Garage – ambulance and car							40		
	4.6.2.	Guard's accommodation and driver's sleeping quarters including toilet and shower							12		
		TOTAL NET SURFACE					1			52	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION					1			10.4	
					<u> </u>						62.

		4. TECHNICAL SUPPORT SERVICES							
				Mech	Air-		2	2	
4.6.	WAR	EHOUSE STORAGE, MAINTENANCE AND EQUIPMENT	Staff	Vent	con	Spec Eq	M²	TOTAL M ²	
		Maintenance and repairs have a great impact on the expected life span of							
		medical and non-medical equipment. Equipment failures can be due to improper							
		utilization, and absence of, or inadequate, maintenance. Repair can be a serious							
		cause of expense for the hospital and will affect the quality of medical care.							
		Pharmaceuticals are ordered and delivered periodically from Operational District							
		Pharmacy Stores.			_				
i i		All these facilities require vehicle access for deliveries. Pharmaceutical and							
i i		medical supplies, equipment storage and maintenance have to be kept							
		impeccably clean.							
		Warehouse for storage can be calculated on a ratio of 2M2 per bed to include							
		pharmaceuticals, furniture, anaesthesia equipment, archives for "2-5 year" health							
		records equipped with four 5M rows of suspended files. Provide air-con for							
		pharmaceuticals - 50m2 for 50 beds, 75m2 for 100 beds. Storage for pharmaceuticals (CPA 2 & 3), fluids, medical supplies, equipment and							
		miscellaneous should have temperature < 30 (preferably air-conditioned dust-free							
		room) with thermometers for temperature control, humidity control. Refrigerator for							
		vaccines, blood products, diagnostic testing equipment and some drugs, special							
		conditions for storage of X ray film, secure, with stable electrical supply, clean							
		water, equipped with shelving and air-compressor for equipment cleaning.				fixed			
CPA 1,		Separate areas for receipt and unpacking of deliveries of goods.				equipme			
2&3	4.7.1.	Provide vault/safe for drugs of addiction and computer for management of stocks.		yes	50	nt	200		
		Maintenance workshop for medical equipment equipped with water supply,							
		working sink, essential tools and measurement equipment. This has to be dust-							
		free and therefore air-conditioned. It should be equipped with a computer to							
CPA 1,		ensure the implementation of the equipment maintenance guidelines. CPA 3							
2 & 3 CPA 2	4.7.2.	requires 50M2.			yes		30		
& 3	4.7.3.	Storage for medical equipment dust-free and air-conditioned.			yes		30		
uo	4.7.0.	Maintenance and engineering workshop for buildings and grounds equipped with			yes				
		water supply, working sink, tools and repairs equipment for minor building repairs							
		and maintenance, electrical and plumbing, externals. This should be equipped							
CPA 1,		with a computer to ensure the implementation of the building maintenance							
2&3	4.7.4.	manual.					50		
CPA 1,									
2&3	4.7.5.	Storage for building supplies and equipment			_		60		
CPA 1, 2 & 3	476	Archives for "2-5 year" records (equipped with four 5M rows of suspended files) -					30		
2&3	4.7.6.	see 3.1.8-9 TOTAL NET SURFACE			_		30	400	
		ADDITIONAL 10% FOR ACCESSORIES AND CIRCULATION			+	1		400	
		TOTAL SURFACE - WAREHOUSE STORAGE, MAINTENANCE &			-	-		73.2	
		EQUIPMENT							445 0
									445.2

					1					
		5. VISITORS AND STAFF QUARTERS								
		In rural areas the provision of accommodation for the staff is indispensable, but it								
		should remain strictly under the control of the administration who should determine which hospitals qualify for such facilities. Families and attendants play								
CPA 1.		an important role in caring for patients and should be provided with shelter and								
2&3		sanitation.								
	5.1.	Residence for Hospital Director								
	5.2.	Medical staff accommodation								
	5.3.	Accommodation for visitors, trainees and attendants								
		6. EXTERNALS AND INFRASTRUCTU	RE	1						
			`							
6.1.	EL EC	TRICITY								
0.1.	ELEC			1	1					
		The electrical systems within the facility will be convenient and designed for the								
		safety of both patients and staff, to International standards, and these will be								
		integral to the building plans of the hospital. The electrical and water installations								
		are closely connected, as water needs energy to be pumped. Therefore the two								
		should be studied conjointly. Cambodia's standard distribution is 220-240 V.								
		In all circumstances at least two sources of electricity are required to guarantee			1					
		back-up in case of failure.								
		Mains supply and generators:			1					
		As is often the case if electricity mains supply is not available, other sources need								
		to be used to generate a stable and sufficient supply in the form of generators								
		(usually 25kVA for an 80 bed hospital). Even when mains supply is available,								
		emergency generators have to be provided to ensure continuous functioning of								
		medical equipment and services. In remote areas hospitals may be tempted to								
		rely entirely on fuelled electricity generators, but even this is not totally reliable as there are often problems in procuring fuel due to lengthy administrative								
		procedures or bad roads.								
		r · · · · · · · · · · · · · · · · · · ·								
		Alternative sources:								
		All these factors argue in favour of turning to one of the most readily available								
		sources in Cambodia – the sun. The Cambodian climate lends itself ideally to								
		solar energy and although the initial investment is high, cost analysis over a								
		period of five years demonstrates its cost effectiveness in the long term.								
		Maintenance and running costs are also low.								
		Distribution:								
		All facilities should be provided with a sufficient number of electrical circuits to								
		take into account specific equipment requirements. All plugs should be earthed.								
		Cost-effectiveness:								
		For each hospital, the cost-effectiveness of various different solutions should be								
		studied before deciding on the best choice. In some cases specific functions								
		such as water-pumps or air-conditioning of the operating theatre, laboratory and								
		pharmacy store, can be envisaged with solar energy, even if the whole Hospital were not equipped.								
		were not equipped.								
CPA 1,										
2&3	6.1.1.	When possible install mains electricity supply								
		Electricity generator to guarantee stable electricity supply and/or back-up (usually 25kVA generator for 80 bed hospital) Can be housed in Garage or Maintenance								
	6.1.2.	Building								
	5	Envisage solar panels to complement electricity supply, or in certain cases								
	6.1.3.	generators to complement solar energy								
	6.1.4.									
6.2.	TELE	COMMUNICATIONS AND INTERNAL COMMUNICATIONS								
		Telecommunications are evolving every day in Cambodia and available systems are likely to change fast over the next few years. All hospitals require 24 hour a								
CPA 1.		day communications with District Health Centres. Adequate solutions should be								
2&3		found for each location.			1					
					1					
		Where possible provide fixed telephone lines, (one for internet connection,								
		another one for calls); if not, mobile phones. In remote areas provide radio phone for link up between hospital and health centres. This requires a 50M high mast								
	6.2.1.	equipped with a lightning conductor. Install close to the emergency room.								
		An internal electronic communications system (or staff messenger) should be								
	6.2.2.	installed for medical staff as well as an emergency call system for patients.								

3. W		6. EXTERNALS AND INFRASTRUCTU	RE							
3. M										
	VATE	3								
		Water is the most important pre-requisite for running a hospital. Provision of safe,								
		potable water contributes to the well-being of patients and reduces the risk of								
A 1,		infections and propagation of diseases such as dysentery, gastro-enteritis and								
& 3		other water-borne diseases.								
		There are three basic functions regarding water supply: collection, treatment and								
		distribution. The normal requirement is 15.000 litres/day for a 100 bed RH to								
		cover the needs of patients, staff and visitors. Adequate water is vital to the								
		Hospital's functioning. An assessment of the available resources should be made before deciding on the best solution for each Hospital.								
A 1,		before deciding on the best solution for each hospital.								
& 3										
		1. Water collection:								
		- preferably mains supply								
		 if not available, ground (tested well-water at minimum 25M – 75M to locate the 								
		aquifer) equipped with pumps								
		- surface water with water treatment filter to guarantee quality water with the right								
		pH								
		- rain water can be channelled off from roofs and stored in stainless steel water			1	1				1
		tanks with a capacity of 15.000 litres			1	1				1
		 reservoirs as an emergency source of water and also for fire-fighting and landscape maintenance should be supplied. Excess rain water can be drained 			1	1				1
		into these to ensure good drainage and to avoid flooding.			1	1				1
		and a avoid hours good dramage and to avoid houding.			1	1				1
		2. Water treatment:			1	1				1
		All these sources of water require regular testing to ensure their quality; the right								
		ph and mineral content (and absence of arsenic or other chemicals). Well water								
		may need no treatment, but surface water and rain water both require filtering								
		before distribution.								
		3. Water distribution:								
		Water should be cool & distributed at a pressure of 3.5kg/cm2.								
		Water supply preferably mains supply but if not sucilable, ground or surface								
6.	6.3.1.	Water supply – preferably mains supply, but if not available, ground or surface Wells - when other sources of drinking water are not available well-water can be				-				
6	6.3.2.	provided from the aquifer - water pump					define			
0.		Water treatment system may be necessary to eliminate germs, minerals and					uenne			
6	5.3.3.	guarantee the right ph.					define			
		Provide reinforced twin concrete cylindrical sealed tanks to collect roof water -								
		capacity 40.000 l x 2 = 80.000 litres. Alternative could be stainless steel 15.000								
6	6.3.4.	litre.								
6	6.3.5.	Water distribution system normally 3.5kg/cm2								
		Water reservoir with storage for 36 hours supply equipped with water pump for								
6	6.3.6.	efficient distribution.					define			
					1					
		Tanks - water reservoirs should be provided for buildings and landscape			1	1				1
		maintenance, fire-fighting and emergency water supply from rainwater. They			1	1				1
6	6.3.7.	should be stocked with aquatic plants and fish and not used for washing.								
		The sanitary systems within the facility will be convenient and designed for				1				
		optimum removal of all human waste, and will be an integral part of the building			1	1				
		plans of the hospital								
					1	1				
		There are three categories of disposable water:			1	1				1
		1. rain			1	1				1
		2. septic and dirty water (from surgical sluices, kitchen drains, laundry etc.)			1	1				1
		3. sewage.			1	1				1
		They all require to be treated separately.			1	1				1
		Rain water should be disposed of separately from sewage and septic water,			1	1				
1		preferably into open ponds that can serve as reservoirs with the overflow into			1	1				1
	5.3.8.	public drainage (see 6.3.6 & 6.3.7.)	⊢−−−							
6		Rainwater should be collected in "storm drains" around the perimeter of buildings			1	1				
6.		to avoid infiltration into the foundations and walls. Open gutters covered with			1	1				1
		concrete slabs make for easy maintenance.				1				
	6.3.9.		-							
	5.3.9.	Water treatment - septic and dirty water should be filtered and decanted to								
	6.3.9.	remove any fatty substances. This water can then be added to sewage and								
6.										

		6. EXTERNALS AND INFRASTRUCTUR							
.4.	EXTER	RNALS	l		1	1	Spec Eq		
PA 1, & 3		Good master site plans and quality site works make a considerable difference to the quality and functioning of the Hospital as a whole. Locating vehicle access carefully for the different departments, providing protected walkways, and siting the buildings of the Hospital well are factors to make it more efficient, more pleasant, and more successful.							
	6.4.1.	Fence should be simple but well built to need low maintenance							
	6.4.2.	Gate should measure at least 4M wide (2x2) and be well designed to need low maintenance. The entrance and exit should be by the same gate for security purposes.							
	6.4.3.	Landscaping should be carefully thought out for the beautification of the site but also for easy maintenance, taking into account trees for shade to buildings to improve climatic response, water basins for heavy rain disposal and as reservoirs, the choice of appropriate materials for walkways etc. Planting is an important aspect of efficient building and site design. The provision of shade trees supplements building design by assisting in the formation of "cool" areas and providing shade for the external walls of buildings, thus making them cooler. They also improve the general aspect of the Hospital as shady, informal, external meeting places. Appropriate finishes should be chosen for external places, pathways, gutters and roads.							
	6.4.4.	Signage should be clear at all levels from external signage to indicate the presence of the Hospital to signage to the emergency and outpatients. All facilities should be clearly signed.							
	6.4.5.	Access road - the internal vehicle circulation should be carefully studied to separate the circulation of vehicles from people. Adequate finishes and drainage should be incorporated in the construction.							
	6.4.6.	Car park - provide adequate parking space for cars and motorbikes at strategic places in the site design. Paths. In the case of modular buildings they can be connected by covered							
	6.4.7.	walkways. They should be finished with adequate easily maintained materials and drainage.							
	6.4.8.	External lighting - especially of access roads and entrances to buildings should be provided							
		TAL APPROXIMATE SURFACE OF RH							