

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR
IMPROVEMENT OF MEDICAL
EQUIPMENT FOR PRIMARY HEALTH CARE
INSTITUTIONS IN EASTERN CAPE
IN
THE REPUBLIC OF SOUTH AFRICA**

August 2003

**JAPAN INTERNATIONAL COOPERATION AGENCY
BINKO LTD.**

PREFACE

In response to a request from the Government of the Republic of South Africa, the Government of Japan decided to conduct a basic design study on the project for Improvement of Medical Equipment for Primary Health Care Institutions in Eastern Cape in the Republic of South Africa and entrusted the study to the Japan International Cooperation Agency (JICA).

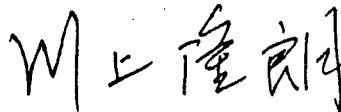
JICA sent to South Africa a study team from March 8 to April 21, 2003.

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

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

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

August, 2003



Takao Kawakami

President

Japan International Cooperation Agency

August, 2003

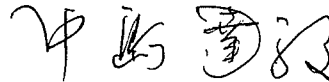
Letter of Transmittal

We are pleased to submit to you the basic design study report on the project for Improvement of Medical Equipment for Primary Health Care Institutions in Eastern Cape in the Republic of South Africa.

This study was conducted by Binko Ltd., under a contract to JICA, during the period from March to September, 2003. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of South Africa and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

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

Very truly yours,



Tatsuro NAKAJIMA

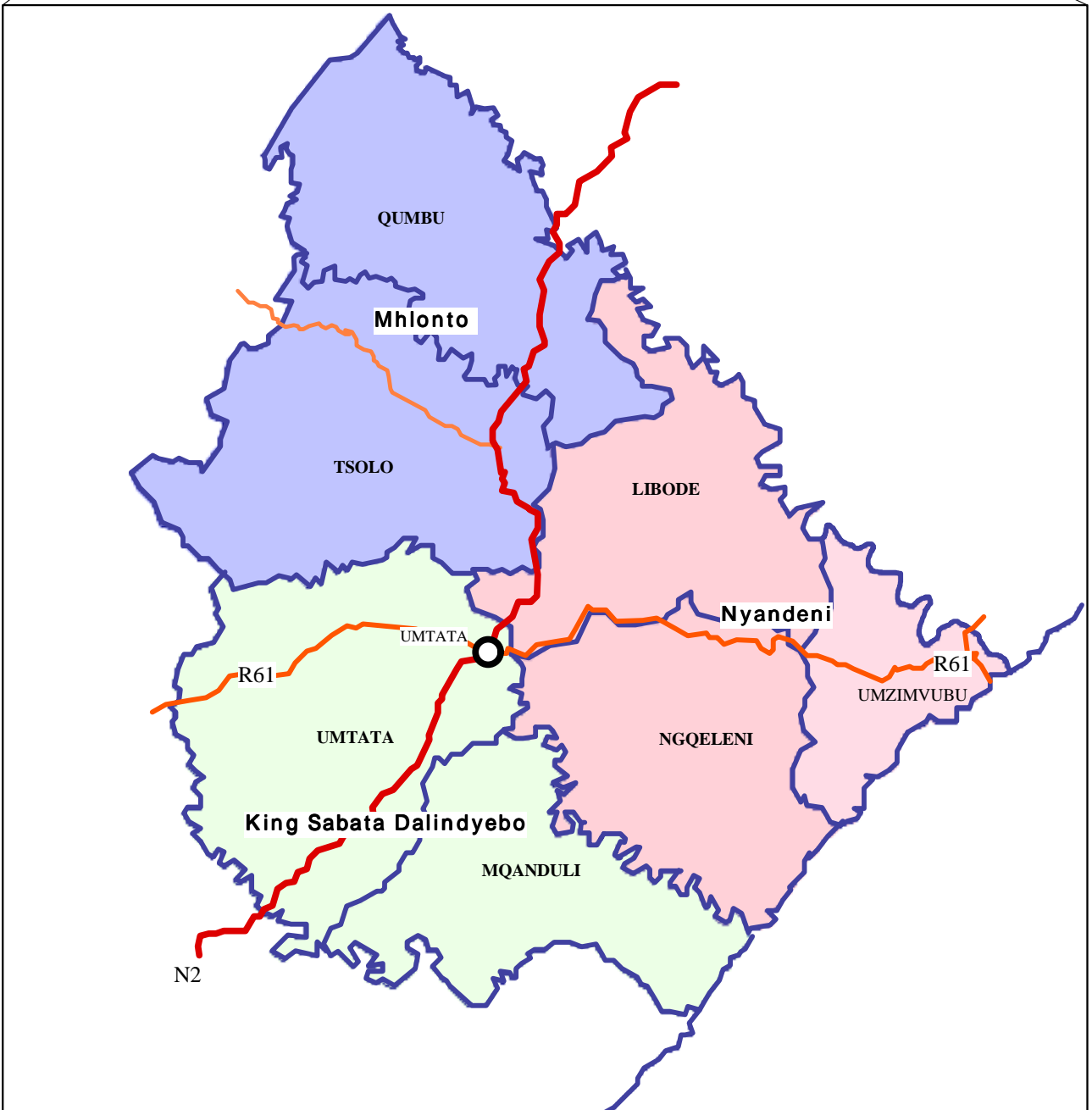
Project manager,

Basic design study team on
The project for Improvement of
Medial Equipment for Primary
Health Care Institutions in
Eastern Cape in the Republic of
South Africa
BINKO LTD.

LOCATION MAP



EASTERN CAPE PROVINCE
OLIVER TAMBO DISTRICT





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Abbreviation

A/P	Authorization to Pay
B/A	Banking Arrangement
BHN	Basic Human Needs
DHIS	District Health Information System
ECDOH	Eastern Cape Department of Health
E/N	Exchange of Notes
GNP	Gross National Product
ICU	Intensive Care Unit
LSA	Local Service Area
NDOH	National Department of Health
NHP	National Health Plan
ODA	Official Development Assistance
PHC	Primary Health Care
QOL	Quality of Life
RDP	Reconstruction Development Program
ZAR	Zuid Afrika Rand

Summary

The Republic of South Africa (hereinafter referred to as "South Africa") is located in the southernmost part of the African Continent. This country has a population of 43,687,000 (in the year of 2001), and blacks account for close to 80% of the population. After the establishment of a new government in South Africa in 1994, apartheid was abolished and reforms have been proceeding for desegregation in various aspects of politics, social environment and economy. The racial disparity between whites and blacks is extremely wide in the health and medical field. While the medical level of hospitals for whites reaches the standard of those in advanced countries, the medical level in the black neighborhoods and the old Bantu Homelands is of a standard equal to that in developing countries. This dual structure has yet to be solved.

The designated area of this project (the Oliver Tambo District of the Eastern Cape Province) is located in the old Bantu Homeland called "Transkei," which was seriously affected by apartheid under the old regime. Because of a delay in the improvement of primary and secondary medical facilities in this area, the health indices are remarkably bad. A survey by the National Department of Health in 1998 shows that the mortality rate of neonates (children under one year of age) is 86.0/1000 births and the mortality rate of children (children under five years of age) is 81.0/1000 persons in the Oliver Tambo District. The mortality rates of neonates and children are 59.4/1000 births and 45.4/1000 persons in the whole of South Africa, respectively. The above-mentioned health indices show the remarkable regional disparity that exists in the medical field.

To improve such a situation, the Government of South Africa has been buckling down to medical reforms. The Eastern Cape Province Department of Health finances the repair and reconstruction of district hospitals, health centers and clinics in the old Bantu Homelands out of its own budget; however, the Provincial Department of Health cannot cover the budget for improvement of the medical equipment.

The Eastern Cape Provincial Government aims at the improvement of medical services, improvement of access to mobile clinics by increasing the number of mobile units (clinic cars), and improvement of various health indices, in the Oliver Tambo District where the medical system is particularly immature among the districts in this province. Therefore, this Provincial Government requested the Government of Japan for Grant Aid to improve the medical equipment in five (5) district hospitals, six (6) health centers and eighty-three (83) clinics in the Oliver Tambo District.

In response to the request, the Government of Japan dispatched a study team to South Africa in 2000. The study team confirmed these matters and collected other relevant information. The study confirmed that this project met the requirements of necessity and appropriateness required of Japan's Grant Aid projects. Accordingly, the Government of Japan decided to conduct a Basic Design Study, and the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study

Team to South Africa from 8th of March to 20th of April, 2003. The study team held discussions with the parties concerned in South Africa and confirmed the following matters, such as the background of this project, the contents of the request, and the implementation system of this project. The team also conducted a field survey of the project facilities and data acquisition.

After the team returned to Japan, further study was conducted. The results were compiled into the Basic Design Study Report. JICA dispatched a mission again from 30th of June to 22nd of July, 2003, in order to explain the contents of this report to the South African side. Both countries reached an agreement on the purport of this Basic Design and the outline of the Implementation Design after holding several discussions. After further analysis in Japan, this project was set so that the contents of cooperation were in line with Japan's Grant Aid guidelines with regard to selection of the project facilities and the range and scale of this project. The Basic Design Study has been rounded off with this report.

This project is part of corrective actions for redressing racial disparity in the medical field created by the old apartheid regime, and aims at contributing to the vesting of equal medical opportunities for residents of the old Bantu Homelands. This is mentioned as an important issue in the medical field of "the Reconstruction Development Program (RDP)" and "the National Health Plan,, which the Government of South Africa has been forwarding. The range and scale of this project are within the framework of Japan's Grant Aid, and the implementation of this project has been appropriated.

The Basic Design is made in accordance with the following aspects.

<Cooperation plan>

1. It aims at improving the medical service situation in the project facilities (the primary and secondary medical facilities in the old Bantu Homelands).
2. The procurement plan is elaborated within the scope of technical and financial sustainability being secured in each project facility.
3. Clinics are at the forefront of primary health care (PHC), and the improvement contributes to raising the standard of community health services. Under such recognition, procurement is made for equipment that is indispensable for such PHC services (focusing on the maternal and child health services) that prevents perinatal diseases, decreases infant mortality, and various infectious diseases.
4. The design of the procurement plan is ensured to consider the scale and role of each service in designated area. The procuring equipment are unified and packaged for the respective medical levels to maintain the balance in services among the project facilities.
5. Procurement of the products made in South Africa can be sufficiently considered after due deliberation on the various advantages of price, after-sales service and so forth.

<Basic policy>

1. The appropriateness and effect of this Grant Aid project should be clarified, and a suitable plan be worked out.
2. Having a clear grasp of the actual situation of the community health and how the medical services are provided for the people in the Eastern Cape Province is reflected in the design.
3. As for the selection of equipment and decision of the procuring quantity and specifications of each equipment for the project facilities (district hospitals, health centers, clinics, etc.), design is made considering the scale and role of each project facility to enable maintaining a balance in medical services among the project facilities at each medical level.
4. Selection of the equipment is made according to the process to determine the equipment procurement and the basic criteria for assigning high or low priority.

The main equipment selected in this project is as follows:

Project Facilities	Quantity	Main Equipment
District Hospitals (5 sites)	188 items (1,396 nos.)	X-ray apparatus, Ultrasound apparatus, Bedside monitors, Operating theatre table and accessories, Operating light, ECG Machine, Sphygmomanometer, Defibrillator, Instrument set for various operations, Delivery bed and mattress, Fetal Doppler, Infant incubator, Phototherapy unit, Bilirubin meter, Oxygen flow meter, Oxygen monitor, Infusion pump, Suction unit, Dental chair w/rotating stool & compressor, High pressure autoclave, Equipment for rehabilitation, Drug cabinet, Refrigerator, Emergency gurney, Wheel chair, Ambulance, etc.
Health Centers (6 sites)	30 items (564 nos.)	Examination table, Fetal Doppler, Examination lamp, Hemoglobin meter, Glucose meter, Nebulizer, Diagnostic set, Suction unit, Weighing scale, Height scale, Resuscitator, Refrigerator, Instrument cabinet, Stretcher, Wheel chair, etc.
Clinics (83 sites)	29 items (2,887 nos.)	Examination table for gynecology, Fetal Doppler, Examination lamp, Hemoglobin meter, Glucose meter, Suction unit, Sphygmomanometer, Nebulizer,

		Diagnostic set, Resuscitator, Refrigerator, etc.
Mobile Clinics (6 areas)	1 item (6 nos.)	Vehicles and diagnostic sets for mobile clinics

The gross business expenses necessary for implementation of this project by Japan's Grant Aid shall be about 1,034 million yen (expenses borne by the Japan side: 1,033 million yen, expenses borne by the South African side: 1 million yen). About twelve (12) months is required for implementation of this project including the Implementation Design and the procurement leadtime of equipment.

The execution organ is the Eastern Cape Province Department of Health in South Africa. The project sites are five (5) district hospitals, six (6) health centers and eighty-three (83) clinics under the jurisdiction of three (3) sub-district health offices of KSD, Nyandeni and Mhlontlo among four (4) sub-district health offices in the Oliver Tambo District.

If this project is implemented, the operation and maintenance of the equipment is conducted by each project facility under the direction of the Provincial Department of Health after the dispensing of equipment and all the annual operating and maintenance costs are in principle defrayed out of the budget for the Provincial Department of Health.

The following effects can be expected from implementation of this project.

(1) Direct Effect

1. Medical services shall be improved in the project facilities by improving the medical equipment in district hospitals, health centers and clinics in the Oliver Tambo District of the Eastern Cape Province.
2. Medical services shall be improved for local residents, who do not live within easy access to clinics, by enhancement of mobile clinics (mobile units).

(2) Indirect Effect

The referral system between district hospitals and the primary medical facilities (health centers and clinics) shall be improved in the Oliver Tambo District.

To implement this project smoothly and make effective and continuous use of the equipment to be procured, the following items are proposed.

(1) Securing medical workers

To improve the medical services at the project facilities, it is necessary to improve the medical equipment and the facilities on the hardware side.

The South African side is also required to secure medical workers (doctors, nurses, medical X-ray technicians, pharmacists, hygienists and so forth) so that the project facilities can provide more appropriate and effective medical services.

- (2) Reinforcement of the operation and maintenance system and budgetary appropriation

In implementing this project, it is necessary to reinforce the operation and maintenance system of the medical equipment and the facilities, which will lead to an increase in the maintenance costs. It is necessary to secure a budgetary appropriation for such costs.

- (3) It is necessary to improve the peripheral infrastructure of the project facilities (access roads, electricity, communication fixtures, water supply, and other facilities).

- (4) Establishment of community structures for participation in PHC issues

The Provincial Department of Health and the sub-district health offices are expected to make further efforts to prompt the communities to cultivate a sense of participation in health and hygiene issues.

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Chapter 1. Background of the Project

Chapter 1 Background of the Project

1-1 Background of the Request

Apartheid (segregation) was employed for many years while white domination continued in the Republic of South Africa. After the general election in 1994, Mr. Nelson Mandela became the President, and the national reconciliation government was established.

The new Government of South Africa proposed "the Reconstruction Development Program (RDP)" aimed at solving the racial and regional disparity that arose in the social and economic fields under the old regime and which emerged from economic stagnation due to sanctions against South Africa by the community of nations. The National Government and each Provincial Government have conducted reforms in various fields (improvement of infrastructure, housing, improvement of medical services, redistribution of farmland, expansion of education, etc.), to solve this racial and regional disparity.

The racial disparity between whites and blacks is extremely prominent in the health and medical field. While the medical level of hospitals for whites reaches the standard of that in advanced countries, the medical level in the black neighborhoods in cities and the old Bantu Homelands is of a standard equivalent to that in developing countries. This dual structure has yet to be solved.

This project (the Oliver Tambo District of the Eastern Cape Province) is located in the old Bantu Homeland called "Transkei," which was seriously affected by apartheid under the old regime. Because of the delay in improvement of the primary and secondary medical facilities in this area, the health indices are remarkably bad. A survey by the National Department of Health in 1998 shows that the mortality rate of neonates (children under one year of age) is 86.0/1000 births and the mortality rate of children (children under five years of age) is 81.0/1000 persons in the Oliver Tambo District. The mortality rates of neonates and children are 59.4/1000 births and 45.4/1000 persons in the whole of South Africa, respectively. The above-mentioned health indices highlight the remarkable regional disparity in the medical field.

To improve this situation, the Government of South Africa has been buckling down to medical reforms. Also, the Eastern Cape Province Department of Health is financing the repair and reconstruction of district hospitals, health centers and clinics in the old Bantu Homelands out of its own budget; however, the Provincial Department of Health cannot cover the budget for the improvement of medical equipment.

The Eastern Cape Provincial Government aims at the improvement of medical services, improvement of access to mobile clinics by increasing the number of mobile units (clinic cars), and improvement of various health indices in the Oliver Tambo District (the old Umtata area) where the medical system is particularly immature among the districts in this province. Therefore, the Provincial Government has requested the Government of Japan to provide Grant Aid for the improvement of medical equipment

in five (5) district hospitals, six (6) health centers and eighty-three (83) clinics in the Oliver Tambo District.

1-2 Outline of the Request

A request was made for the improvement of medical equipment for five (5) district hospitals, six (6) health centers and eighty-three (83) clinics in the Oliver Tambo District (Nyandeni sub-district, Mhlontlo sub-district, and KSD sub-district) of the Eastern Cape Province. The following lists the name of each project facility and the main equipment requested.

(1) Name of the designated facilities

District Hospitals

- | | | |
|------------------------|--------------------------|---------------------------|
| 1. Canzibe Hospital | 2. St. Barnabas Hospital | 3. Nessie Knight Hospital |
| 4. St. Lucy's Hospital | 5. Zithulele Hospital | |

Health Centers

- | | | |
|-------------|----------------|---------------------|
| 1. Baziya | 2. Ngangelizwe | 3. Stanford Terrace |
| 4. Mbekweni | 5. Qumbu | 6. Mhlakulo |

Clinics

Nyandeni District (Under Canzibe Hospital)

- | | | |
|---------------------|---------------|--------------|
| 1. Buntingville | 2. Nkumandeni | 3. Nqanda |
| 4. Ntibane | 5. Pilani | 6. Lwandile |
| 7. Nolita | 8. Ntapane | 9. Lujizweni |
| 10. Canzibe Gateway | | |

Nyandeni District (Under St. Barnabas Hospital)

- | | | |
|--------------------|-------------------|--------------------------|
| 1. Libode | 2. Nyandeni | 3. Malusi |
| 4. Double Falls | 5. Mangcwanguleni | 6. Ndanya |
| 7. Mevana | 8. Ngcolora | 9. Makotyana |
| 10. Nkanga | 11. Mgwenyana | 12. St. Barnabas Gateway |
| 13. Nkanunu | 14. Old Bunting | 15. Cwele |
| 16. Mampondomiseni | | |

Mhlontlo District (Under Nessie Knight Hospital)

- | | | |
|---------------|----------------|---------------------------|
| 1. Nxotwe | 2. Gura | 3. Tsilitwa |
| 4. Tina Falls | 5. Kalankomo | 6. Shawbury |
| 7. Cabavale | 8. Mahlungulu | 9. Ngwemnyama |
| 10. Qanqu | 11. Mbalisweni | 12. Nessie Knight Gateway |
| 13. Mdyobe | | |

Mhlontlo District (Under St. Lucy's Hospital)

- | | | |
|----------------|--------------------|-----------|
| 1. Langeni | 2. Sidwadweni | 3. Tsolo |
| 4. Upper Mjika | 5. Lower Gungululu | 6. Lotana |

7. Mbokotwana 8. Mhlahlane 9. Beledale
10. St. Lucy's Gateway

KSD District (Under Umtata General Hospital)

- | | | |
|------------------|---------------|------------------|
| 1. Ntshela | 2. Zitatele | 3. Sitebe |
| 4. Tabase | 5. Tyelebana | 6. Upper Xongora |
| 7. Xhwili | 8. Ngcengane | 9. Qunu |
| 10. Civic Center | 11. Kambi | 12. Mpeko |
| 13. Mpunzana | 14. Ntshabeni | 15. Qokolweni |
| 16. Sangoni | 17. Ndibela | 18. Ncambele |
| 19. Efata | 20. Maxwel | 21. Mqekzeweni |

KSD District (Under Zithulele Hospital)

- | | | |
|--------------|-----------------|--------------|
| 1. Ndzulwini | 2. Mqanduli | 3. Luthubeni |
| 4. Mapuzi | 5. Ngcwanguba | 6. Ngqungqu |
| 7. Ntlangaza | 8. Pumalanga | 9. Jalamba |
| 10. Wilo | 11. Hlabatshane | 12. Ngwenya |
| 13. Pakamile | | |

(2) Main Equipment Requested

The equipment requested from each project facility is as follows:

Project Facilities	Types of Items (Nos. of Qty's)	Main Equipment Requested
District Hospitals (5 sites)	246 Items (2,712 nos.)	X-ray, Ultrasound scanner, Monitors, Operating table, ECG, Defibrillator, Instrument set, Delivery bed, Fetal Doppler, Infant incubator, Suction unit Infusion pump, Oxygen monitor, Bilirubin meter, Dental chair, Ambulance, Rehab. equipment, Autoclave, Refrigerator, etc.
Health Centers (6 sites)	21 Items	Examination table, Peak flow meter, Fetal Doppler, Examination light, Suction unit, Diagnostic set, Resuscitator, Refrigerator, etc.
Clinics (83 sites)	21 Items (Total 2,053 nos.)	
Mobile Clinics (6 areas)	1 Item (6 nos.)	Vehicle w/Medical Equipment (Use for Mobile Clinics)
Maintenance unit	1 lot	Equipment for maintenance dept. (1 lot)

Chapter 2. Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

"The National Health Plan" was proposed in the health and medical field in conformity with "the Reconstruction Development Program (RDP)" that is being promoted by the central government. In accordance with the above-mentioned plans, reforms are proceeding aimed at reconstructing the medical system (particularly the improvement of Primary Health Care and medical benefits to the community) through the cooperation of the competent authorities of the nation, provinces and districts. The Eastern Cape Province Department of Health proposed "the Strategic Plan 2002~2005" and has been conducting radical reform of the community health structure.

This project (the Oliver Tambo District of the Eastern Cape Province) is located in the old Bantu Homeland called "Transkei," which was seriously affected by apartheid under the old regime. Because of the delay in the improvement of primary and secondary medical facilities in this area, the health indices, such as the mortality rates of neonates and children, are inferior compared with the national average of South Africa. The regional disparity is remarkable in the medical field.

The clinics and the health centers where patients receive primary care are not adequately provided with fundamental medical equipment. While the patients who cannot be treated in these primary medical facilities are referred to district hospitals, many an existing equipment is too old to be used or inadequate and patients cannot receive adequate medical services even in the district hospitals.

Under these circumstances, the Eastern Cape Provincial Government shall improve the medical equipment in five district hospitals, six health centers and eighty-three clinics, in the Oliver Tambo District where the medical system is particularly immature among the districts in this province.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

The procurement plan of this project is designed according to the following aspects aimed at improving the medical services in the project facilities (the primary and secondary medical facilities in the old Bantu Homelands).

- (1) The procurement plan is proposed within the scope of technical and financial sustainability being secured in each project facility.
- (2) Clinics are at the forefront of PHC services, and the improvement will contribute to raising the standard of the community health service. By this recognition, procurement will be made for equipment indispensable to PHC services (focusing on maternal and child health services) such as those used in the prevention of

perinatal diseases, the decrease in infant mortality, and the prevention of various infectious diseases.

- (3) Provision of the medical services is planned within an extensive area. To thus avoid regional disparity, it is deemed indispensable to procure a package of fundamental medical equipment.
- (4) In designing this procurement plan, the procurement of products made in South Africa can be sufficiently considered after due deliberation on the various advantages of price, after-sales service and so forth.
- (5) The design of the procurement plan is made considering the scale and role of each project facility. The procuring quantity and specifications of each equipment are unified and packaged for the facilities of the respective medical levels to maintain the balance in services among the project facilities.

The design of this project pursues the following:

<Administrative policy>

- (1) The Government of South Africa is promoting "the National Health Plan" that was compiled from the fundamental policies on medical services in "the Reconstruction Development Program." This project should conform with "the National Health Plan" and "the Strategic Plan 2002~2005 of medical services in the Eastern Cape Province," and should match with the medical system promoted by the Eastern Cape Provincial Government.
- (2) The scale of the project and scope of cooperation should match with the activity condition of the project facilities (the number of medical examinees, the number of introduced patients, the number of operations, the number of deliveries, medical personnel, medical resources, maintenance crew and so forth).

<Policy on demand>

- (1) This project should be designed to match with the improvement plan of the primary and secondary medical services in the general health plan of the Eastern Cape Province.
- (2) This project should be designed to match the aims of the health sector in the Eastern Cape Province.
- (3) Consideration is thus made such that the effect of this project can be predicted from the capacity for referral care at the provincial level and the district level and a change in the outcome function (the number of outpatients and inpatients, the number of operations, the number of referral patients, etc.) can be monitored after implementation of this project.

<Policy on technical aspects>

- (1) The procurement plan is proposed after clarifying the function and role to be fulfilled by each project facility, and attention shall be paid to the condition

of the existing equipment and the referral system between the primary and the secondary medical facilities.

- (2) The procurement plan is proposed to assure the technical sustainability of each facility after clarifying the demands and the technical level in the project facilities.

<Policy on infrastructure>

Selection of the equipment is made to match with the basic infrastructure (water supply and drainage, electric power, road, communication fixtures, etc.) of the project sites.

<Policy on maintenance>

- (1) For equipment of the project facilities, a maintenance request is now given to each manufacturer or authorized agent. Therefore, conclusion of an overall contract on maintenance is compulsory for main equipment such as X-ray apparatus, sterilizer, and other electromedical apparatuses.
- (2) Procurement is planned for products made in Japan or South Africa in this project so that the equipment can be sufficiently maintained, thus enabling adequate inventory control of the necessary parts and consumables in the project facilities.

<Policy on work period>

- (1) The work period for implementation of the project shall be one (1) fiscal term within twelve (12) months of the conclusion of the Exchange of Notes (E/N). This work period includes the procurement leadtime and installation of the equipment.
- (2) For implementation of this project, the work schedule should not disturb the daily activities of the project facilities.

2-2-2 Basic Plan

This project aims to improve the medical services extended at district hospitals, health centers and clinics in the Oliver Tambo District of the Eastern Cape Province, thus improving the health status of the residents.

(1) Overall plan

The project facilities are those providing primary and secondary medical services in the Oliver Tambo District of the Eastern Cape Province, which was a Bantu Homeland under the former apartheid regime. This project aims at improving the quality of the project facilities and redressing the regional disparity in medical services with other districts. The health status of all its residents shall thus be improved

with this project.

The project facilities:

Five (5) district hospitals, six (6) health centers and eighty-three (83) clinics, under the control of three (3) sub-district health offices in the Oliver Tambo District of the Eastern Cape Province. Ninety-four (94) sites in total. One hundred and five (105) mobile points covered by the mobile clinic.

/Under the control of the KSD District health office:

Zithulele Hospital and 13 clinics

Umtata General Hospital, 4 health centers and 21 clinics

33 Mobile points covered by mobile units

/Under the control of the Mhlontlo health office:

Nessie Knight Hospital, 1 health centre and 13 clinics

St. Lucy's Hospital, 1 health centre and 10 clinics

52 mobile points covered by mobile units

/Under the control of the Nyandeni health office:

Canzibe Hospital and 10 clinics

St. Barnabas Hospital and 16 clinics

20 mobile points covered by mobile units

(2) Equipment plan

1) Criteria for Selection of Equipment

The equipment to be procured in this project was selected based on the results of a field survey, according to the project goals and the following "Basic criteria for selection of equipment."

As for the equipment to be procured, consideration was given to the appropriateness, necessity and procuring quantity of each equipment.

The result of the assessment is shown in Table 2-9 "Consideration of Equipment Requested."

【 Basic criteria for selection of equipment 】

1. Criteria for assigning high priority

- ① Equipment that is to be a replacement of existing but old equipment.
- ② Equipment that is to be a supplementation of equipment obviously in shortage.
- ③ Equipment that is indispensable for basic medical services in a primary or secondary medical facility.
- ④ Equipment that is easy to operate and maintain.
- ⑤ Equipment that may provide much benefit and effect in the designated facility.

- ⑥ Equipment that is highly cost-effective.
- ⑦ Equipment whose medical usefulness and necessity has been proven.

2. Criteria for assigning low priority

- ① Equipment that requires high operation and maintenance cost.
- ② Equipment that has limited benefit and effect in the designated facility.
- ③ Equipment that is low in cost-effectiveness.
- ④ Equipment that is not used for diagnosis and treatment, but for academic research purposes.
- ⑤ Equipment that can be substituted with a simpler equipment .
- ⑥ Equipment that may cause environmental pollution through its medical waste, etc.
- ⑦ Equipment whose medical usefulness and necessity has not been proven.
- ⑧ Equipment that is not for medical use but for private usage by the hospital staff.
- ⑨ Equipment of which the designated facility has more than the minimum required quantity (inefficient or redundant equipment).

【 Additional criteria after consideration of the local conditions 】

1. Criteria for assigning high priority

- ① Equipment that can be operated by the current technical capability of the designated facility.
- ② Equipment that is or is to be maintained by the personnel on the inside or the personnel on the outside entrusted with the maintenance.
- ③ Equipment that matches with the social position and function of the designated facility (referral system and local needs).
- ④ Equipment whose usefulness can be expected also in cooperation with other donors.

2. Criteria for assigning low priority

- ① Equipment for which it is difficult to procure spare parts and consumables locally.
- ② Equipment that cannot be operated by the current technical capability of the designated facility.
- ③ Equipment that is not or shall not be maintained by the personnel on the inside or the personnel on the outside entrusted with the maintenance.
- ④ Equipment that does not match with the social position and function of the designated facility (referral system and local needs).

- ⑤ Equipment that requires large scope in infrastructure work (water and power supply, drainage, etc.) for its installation.
- ⑥ Equipment that can be substituted by efficient usage of the existing equipment.

【 Additional criteria after consideration of the local conditions 】

For equipment such as X-ray apparatus for which the WHO has established a standard, a model of the equipment is selected according to such standard.

Selection of the equipment to be procured was made through the above-stated process, and a comprehensive assessment is provided for each of the equipment.

The result is shown in Table 2-9 " Consideration for Equipment Requested"

[Comprehensive assessment]

○: Equipment for which procurement has been deemed appropriate.

×: Equipment that is not included in the project.

2) Examination of the equipment requested

The equipment requested was examined regarding the following issues at each level of district hospital, health centre and clinic.

As for the equipment in the priority "A" and "B" stated in the Minutes of Discussions dated 14th April 2003, the following is the process to determine the specifications and the procuring quantity for the equipment.

District hospitals

① INTENSIVE-CARE & RESUSCITATION WARD

Improving the Intensive-care & Resuscitation Ward is urgently required by the district hospitals. Securing an ICU with specialist nurses and four (4) single rooms is planned in the hospital.

Since an ICU has recently been set up in St. Barnabas Hospital and it is provided with medical equipment, part of the equipment is excluded from this procurement plan.

Bedside monitor

(Priority: A / Requested Quantity: 4) Planned Quantity: 2

This equipment is used to gauge the condition of a patient by monitoring changes in vital signs such as blood pressure, ECG, respiration rate, temperature, etc. Essentially every bed in the ICU should be provided with one. Considering the present situation of demand (2~5 patients a week) and the treatment in the ICU, it is possible to deal with such a situation by assigning a bedside monitor to every 2 beds. Since this equipment has been recently procured for St. Barnabas Hospital, it is not procured for this hospital in this project.

High-low beds with mattress

(Priority: A / Requested Quantity: 4) Planned Quantity: 4

In the ICU, it is necessary to procure patient beds with such specifications that enable complex control of height and tilting for ease of changing the position of a patient. Since it is planned to improve the ICU with 4 beds in this project, procurement is made for 4 units as requested. As for drip stands necessary for instillation in patients, procurement is determined by the number of beds. Since the ICU in St. Barnabas Hospital is sufficiently covered by existing equipment, it is not procured for this hospital in this project.

Infusion pump

(Priority: A / Requested Quantity: 2) Planned Quantity: 2

This is used for continuous administration of medication at a constant rate within a fixed time, and it is indispensable for treatment in the ICU. Some hospitals possess infusion pumps but they have become too old. Procurement is planned for 2 units in this project.

Infusion pump-syringe type

(Priority: A / Requested Quantity: 2) Planned Quantity: 2

This is used for continuous administration of medication at a constant rate within a fixed time, and it is indispensable for rigid infusion control in an infant patient or a seriously ill patient in the ICU. Since it is planned to improve the ICU with 4 beds in this project, the requested quantity is deemed appropriate.

② MEDICAL & SURGICAL WARDS

The Medical & Surgical Wards in the hospital are generally divided into two types, one is for male and the other is for female inpatients. The equipment to be procured is examined for 50 beds (25 beds each for female and male patients) on average.

Bed (B-type) w/adjustable back rest & mattress - mobile

(Priority: B / Requested Quantity: 15) Planned Quantity: 14

According to the patient's condition, it is necessary for the patient to be assigned to a bed with a crank function that enables the changing of his/her position. Procurement is planned for beds with an adjustable back rest (one crank type). Obsolete beds will be renewed, and procurement is planned for 7 units in each ward for male and female patients.

Vital signs monitor

(Priority: A / Requested Quantity: 2) Planned Quantity: 1

This is not presently available in the project hospitals. It is deemed necessary to make a minimum procurement of 1 unit for those hospitals undertaking secondary medical care. It should be for common use between wards for male and female patients.

Bedpan - stainless steel

(Priority: B / Requested Quantity: 15) Planned Quantity: 4

Procurement is made for 2 units in each ward for male patients and female patients. It is not necessary for patients who can walk unassisted, and the propriety of the requested quantity is low.

Urinals - stainless steel

(Priority: B / Requested Quantity: 15) Planned Quantity: 2

Procurement is made for 2 units as renewal of the existing equipment in the ward for male patients.

Various diagnostic apparatuses

(Priority: A / Request Quantity: 2 each) Planned Quantity: 2 each

As for diagnostic apparatuses such as diagnostic set, ECG, glucose-meter, hemoglobin-meter, pulse oximeter and peak flow meter, a request was made for the procurement of 2 sets. Since the designated area has a tendency to hypertension, diabetes and respiratory disease, it is deemed necessary to procure these basic diagnostic apparatuses. Procurement is planned for 1 set in each ward for male and female patients. Each equipment should have such specifications as facilitate its operation and maintenance, and a simple model is selected.

③ MATERNITY WARD

The following is the current data on the number of deliveries conducted in the project hospitals.

Table 2-1 Present Situation of Maternity Ward

District Hospital	Monthly Number of Delivery	Delivery Room	Existing Delivery Bed
Canzibe Hospital	55	1	2
St. Barnabas Hospital	180	1	4
Nessie Knight Hospita	50	2	4
St. Lucy's Hospital	80	1	2
Zithulele Hospital	100	1	2

Source: Result of field survey & reply to the questionnaire

As the above-mentioned data show, deliveries are conducted for about 100 patients a month on average. On the assumption that it enables a project hospital to conduct two (2) deliveries simultaneously, an examination was conducted as to the procuring quantity of equipment such as delivery bed, bassinet, infant incubator and infant warmer.

Delivery bed and mattress

(Priority: A / Requested Quantity: 2) Planned Quantity: 2

The existing delivery bed is a flat type and the specifications are quite simple without the leg propping function. In this project, procurement is planned for this equipment with specifications that enable a woman in labor to assume the parturient posture with the crank function and to heighten the work efficiency of midwives. Procurement is planned for 2 units through renewal of the existing equipment.

Bassinet

(Priority: B / Requested Quantity: 6) Planned Quantity: 4

Procurement is planned for 2 units in the delivery room and 2 units in the neonatal room.

Infant incubator

(Priority: A / Requested Quantity: 3) Planned Quantity: 2

An infant incubator with a complete ventilation system enables care of a premature baby or a neonate at a suitable temperature and humidity and with high oxygen, and it is indispensable in the Maternity Ward. Procurement is planned for 2 units, namely, a unit in the delivery room and another for the neonatal room.

Infant warmer

(Priority: A / Requested Quantity: 2) Planned Quantity: 2

This is used to monitor and treat the neonate just after birth and warm up a baby suffering from hypothermia. As for care of a newborn baby in a short time, this equipment is excellent in mobility and usability. Procurement is planned for 2 units, namely, a unit in the delivery room and one in the neonatal room.

④ PEDIATRIC WARD

Each project hospital has 15~30 beds in its Pediatric Ward. While Zithulele Hospital is small in scale and has 15 beds, this ward is now under renovation and shall be provided with about 25 beds. The scale differentials in this ward among the project hospitals shall therefore be abolished. Thus, procurement in this project shall be made uniformly in all the project hospitals as to the quality, quantity and specifications of each equipment.

Bedpan - stainless steel

(Priority: B / Requested Quantity: 5) Planned Quantity: 4

In the Pediatric Ward, infant patients up to the age of 12 are treated and hospitalized. Renewal is planned for 4 units with the intention of making up the number with the pediatric beds (Item No. 9) to be procured.

Infant transport incubator

(Priority: B / Requested Quantity: 1) Planned Quantity: 1

This is used for conveying a baby referred from a clinic or health center to hospital, and usually it is positioned as equipment loaded in an ambulance that is dispensed to the Casualty Department. Consideration

was given to the aspects of maintenance of this equipment, and procurement is planned for a model with a simple structure and with a simple function.

Juvenile bed with mattress

(Priority: B / Requested Quantity: 2~3) Planned Quantity: 0

Procurement is planned for pediatric beds (Item No. 9) of similar quality, and therefore, this is excluded from the procurement plan in this project.

Refrigerator for immunization

(Priority: B / Requested Quantity: 1) Planned Quantity: 1

This equipment is widely used for the preservation of medicines, infusions and others in the Pediatric Ward. The existing equipment is old in every hospital, and is insufficient in quantity. It is deemed appropriate to make a minimum procurement of 1 unit.

⑤ OPERATING THEATRE

There is a large-scale operating theatre in each project hospital, which is relatively well equipped. Under the budget of the Provincial DOH, equipment such as anesthetic machine, ventilator and others for the theater has been procured for the hospitals.

Selection of the equipment is made after due deliberation on the existing equipment of each project hospital in order to avoid overlap of the equipment.

Operating light - ceiling type

(Priority: A / Request Quantity: 1) Planned Quantity: (See below)

The existing equipment of St. Barnabas Hospital and Zithulele Hospital is new and shall be serviceable from now on. It is excluded from the procurement plan in this project.

The existing equipment of the other 3 hospitals has been in service for 15 years or more and the aging degradation is remarkable. Therefore, procurement shall be made for 1 unit each for these 3 hospitals as renewal of the existing but old equipment.

Operating theatre table and accessories

(Priority A / Requested Quantity: 1) Planned Quantity: (See below)

Since new operating tables have been provided to Canzibe Hospital, Zithulele Hospital and St. Lucy's Hospital, it is not necessary to procure new equipment in this project. Procurement shall be made as renewal of the operation table in which aging degradation is remarkable. Procurement is planned for 2 units to St. Barnabas Hospital and 1 unit to Nessie Knight Hospital.

Electrosurgical unit

(Priority: A / Requested Quantity: 1) Planned Quantity: (See below)

This is used for incision and coagulation of tissues of the patient, and is indispensable in surgery. Procurement is planned for 6 units in total, namely, 2 units to St. Barnabas Hospital and 1 unit each to the other district hospitals.

Suction unit - electric

(Priority: A / Requested Quantity: 1) Planned Quantity: (See below)

Most of the existing equipment sustains a reduced suction force, and it is used despite frequent repairs for problems with suction. It is deemed appropriate to procure 6 units in total, namely, 2 units to St. Barnabas Hospital and 1 unit each to the other district hospitals.

⑥ CSSD

The following is the condition of high pressure autoclaves (200~250 liters)

Table 2-2 Present Condition of Autoclave in CSSD

District Hospital	Holdings	Condition
Canzibe Hospital	1	In service (decline in the function)
St. Barnabas Hospital	2	In service (relatively new)
Nessie Knight Hospital	1	In service (decline in the function)
St. Lucy's Hospital	2	1 unit in service (decline in the function) 1 unit out of order
Zithulele Hospital	1	In service (Decline in the function)

Source: Result of field survey

used in the CSSD of each project hospital.

Considering the above-mentioned condition, procurement is planned as renewal of such autoclaves in the CSSD.

Autoclave high pressure

(Priority: A / Requested Quantity: 1) Planned Quantity: (See below)

As for such equipment in Canzibe Hospital, Nessie Knight Hospital, St. Lucy's Hospital and Zithulele Hospital where malfunction is recognized, renewal is planned for 4 units in total, namely, a unit to each hospital.

As for St. Barnabas Hospital, procurement is not planned in this project.

⑦ CASUALTY

In each of the 4 district hospitals except for St. Lucy's Hospital, the Casualty Department is housed in the Outpatients Department building that was

renovated during 1989~1998.

As for the main equipment such as ambulance, ECG machine, defibrillator and vital signs monitor requested for this Casualty Department, procurement is planned as follows:

Ambulance

(Priority: A / Requested Quantity: 1~2) Planned Quantity: 1 each

The following is the monthly average number of referral patients in each project hospital.

Table 2-3 Number of Referral Patients to the Superordinate Hospital (Monthly Average)

Health District	District Hospital	Number of Referral Patients from Health Centres	Number of Referral Patients from Clinics
Nyandeni District	Canzibe Hospital	N/A	49
	St. Barnabas Hospital	N/A	43
Mhlontlo District	Nessie Knight Hospital	169	18
	St. Lucy's Hospital	232	22
KSD District	Zithulele Hospital	N/A	40
	Umtata General Hospital	686	23

Source: Reply to the questionnaire, etc.

To improve the referral system, it is important to improve the medical equipment and to secure a means of conveyance for the patients.

Procurement of an ambulance is planned for each project hospital in this project.

ECG machine

(Priority: A / Requested Quantity: 1 each) Planned Quantity: (See below)

This is used for the diagnosis of arrhythmia and ischemic heart disease, and it assumes great importance as equipment for circulatory and physiological function testing. The field survey confirmed that new ECG machines are being used in Canzibe Hospital and Zithulele Hospital. Therefore, procurement is planned for 1 unit each to the Casualty Department of St. Barnabas Hospital, Nessie Knight Hospital and St. Lucy's Hospital in this project.

Defibrillator

(Priority: A / Requested Quantity: 1 each) Planned Quantity: 1 each

This is indispensable equipment in the Casualty Department. A request was made for the procurement of a minimum quantity of 1 unit. This equipment shall be procured as an appurtenance for an emergency gurney (Item No. 13-1).

Vital signs monitor

(Priority: A / Requested Quantity: 1 each) Planned Quantity: 1 each

It is necessary to strictly monitor and grasp changes in vital signs of seriously ill patients such as blood pressure, ECG, respiration rate, temperature, and so forth. A minimum procurement of 1 unit shall be made in this project.

⑧ OUTPATIENTS DEPARTMENT

In each of the 4 district hospitals except St. Lucy's Hospital, the Outpatients Department building was renovated from 1989~1998. The following outlines the contents of activities and the scale of the Outpatients Department in each project hospital.

Table 2-4 Present Situation of Outpatients Department

District Hospital	Annual Number of Outpatients	Consultation Room	Population Covered by Each Hospital
Canzibe Hospital	15,626	7	77,000
St. Barnabas Hospital	33,241	7	400,000
Nessie Knight Hospital	28,735	4	103,894
St. Lucy's Hospital	15,600	4	102,659
Zithulele Hospital	19,728	4	129,596

Source: Result of field survey & reply to the questionnaire

A request was made for basic equipment, and all such equipment is indispensable for secondary medical facilities. Procurement of the equipment is designed along the lines that improvement is made for 2 rooms.

It is deemed possible to have some equipment for common use, such as ECG, sterilizer, weighing scale and height scale.

Ultrasound scanner

(Priority: A / Request Quantity: 1) Planned Quantity: (See below)

The imaging diagnostic by echography is noninvasive to the patient, and is useful diagnostic equipment. As for procurement of this equipment, requests were also made from the Maternity Ward and the Radiology Department and this equipment is also in great demand for obstetric and gynecological patients in this Outpatients Department. Therefore, procurement is planned for 1 unit for the consultation room in the Outpatients Department.

Since this equipment was recently procured for Canzibe Hospital, it shall not be procured in this project.

⑨ RADIOLOGY DEPARTMENT

The field survey confirmed that the demand for radiography examination was about 5000 cases a year and about 20 cases a day on average, the existing

equipment is defective and the image quality of the radiographs has diminished. It is time for renewal considering the durability.

This equipment is indispensable for hospitals where secondary medical service is provided. Renewal is planned for one set of X-ray apparatus (stationary type)/Mobile X-ray apparatus and accessories in this project.

It was confirmed that Nessie Knight Hospital and Zithulele Hospital already procured a mobile X-ray apparatus last year and every hospital has renewed its X-ray film processor. These are excluded from this procurement plan.

⑩ DENTAL DEPARTMENT

Dental services are one of the important services in the Outpatients Department of the district hospitals.

The following table shows the number of existing equipment and its condition in each project hospital. Procurement of this equipment is planned considering the present situation.

Table 2-5 Present Situation of Dental Department

District Hospital	Holdings	Condition	Examination Result
Canzibe Hospital	1	Good	Unnecessary to procure a dental unit
St. Barnabas Hospital	2	Good (1 unit) Old (1 unit)	Renewal of 1 unit
Nessie Knight Hospital	1	Old	Renewal of 1 unit
St. Lucy's Hospital	1	Old	Renewal of 1 unit
Zithulele Hospital	1	Good	Unnecessary to procure a dental unit Renewal of an instrument set for dental

Source: Result of field survey

As for the dental X-ray unit, film processor and instrument set for accessories of the Dental Dept., procurement is planned for 1 unit (set) each of such equipment. Since St. Barnabas Hospital has a serviceable dental X-ray unit and film processor, procurement shall not be made for this hospital.

⑪ REHABILITATION

The field survey confirmed that each of the project hospitals has a Rehabilitation Department. The Rehabilitation Department is located in the Outpatients Department building or is located close to the ward. Rehabilitation training is extended to 30 patients a week in every hospital. The priority of the equipment requested is all "A" except the treadmill machine. Regarding the planned quantity of the equipment, it is deemed that all the patients can be covered by 1 unit each of the equipment. As for traction unit and wall stall bars, these shall be procured for those hospitals, Canzibe Hospital and St. Lucy's Hospital, where space has been secured for their installation. Procurement shall not be made for the other 3 hospitals.

⑫ LABORATORY

The function of the Laboratory in the hospital has changed dramatically since 2001 and this function has been entrusted to "the National Health Laboratory Service (public corporation)." This corporation dispatches analyzing equipment and technicians to the Laboratory of each hospital and they conduct clinical examinations there. It was confirmed that the hospitals would cope with the current system in obtaining the examination data. Procurement for the Laboratory shall not be made in this project.

⑬ MORTUARY

The field survey confirmed that none of the project hospitals held and had no intention of holding a postmortem examination in the near future. Procurement for this department shall not be made in this project.

⑭ OTHERS

A request was made for the procurement of maintenance tools, an incinerator and generator for emergency use. The field survey confirmed the following facts and these are excluded from this procurement plan.

Maintenance tools

(Priority: B')

Planned Quantity: 0

As for maintenance of the equipment, a maintenance contract with manufacturers or their agents has been respectively entered into. It shall be the duty of the South African side to conclude a maintenance contract as to the medical equipment to be procured for the district hospitals in this project, such as X-ray apparatus, ultrasound apparatus and high pressure autoclave. Therefore, this equipment is excluded from this procurement plan.

Incinerator

The budget for incinerators in the project hospitals was approved as a joint undertaking between the Provincial Department of Health and Public Works. Incinerators have already been installed in all hospitals except Nessie Knight Hospital (it shall be installed within 2003). Therefore, it is excluded from this procurement plan.

Generator (emergency generator)

The project hospitals have installed generators as a reserve power source and they will properly function in the event of a power failure. Renewal of these generators is therefore unnecessary.

Health Centers

As for the type of equipment and its quantity for Health Centers, the original request was exactly the same as the procurement request for Clinics. The field survey confirmed that there was a difference in the scale of the facilities and the role in the management system between Health Centre and Clinic.

The equipment originally requested (21 items) was selected based on the procurement for clinics. After due consideration of the function and role as health centre, an additional procurement is planned for 17 other items.

Considering the activity condition of the project health centers and the clinics (see the following Table 2-6 and Table 2-7) and "the idea of packaging" mentioned in the design policies, procurement of the equipment is planned for a health centre at a quantity 3 times as high as the procurement for a clinic.

Table 2-6 Activity Condition of the Project Health Centres
(6 places)

Items	Simple Average
Population of the Object Area	35,800
Doctors	1.5
Registered Nurses	12
Total Personnel	32.5
Consultation Hour	24 hours
Patients per Month	8,577
Deliveries per Month	92.5

Source: Reply to the questionnaire

As for the fetal Doppler machine, hemoglobin meter and glucose meter, a minimum supplementation is planned.

Clinics

As for the clinics, procurement is planned for the equipment originally requested and an additional 15 items of basic and indispensable equipment, totaling 36 items all together.

As for "Supply as Packaging" of the equipment to be procured mentioned in the basic policies on the equipment plan, procurement is planned considering the activity condition of clinics. A minimum procurement of 1 unit is planned for each of the durable goods such as examination table, weighing scale, height scale, refrigerator, drip stand, and so forth. Procurement is planned for 2 units each of the equipment with hard attrition such as diagnostic set, stethoscope, sphygmomanometer, dressing instrument set for gynecology, and so forth).

Table 2-7 Activity Condition of the Project Clinics
(83 places)

Items	Simple Average
Population of the Object Area	12,700
Doctors	-
Registered Nurses	2.9
Total Personnel	7
Consultation Hour	9 hours
Patients per Month	1,394

Source: Reply to the questionnaire

As for the examination lamp, procurement is planned together with "the standby generator for the examination lamp" in order to handle the power conditions. Furthermore, procurement is planned for the equipment for clinics with due regard to the presence of delivery management and the size of the facilities.

① The clinics where deliveries are not conducted.

Delivery instrument set and ablution basin are excluded from the procurement plan.

The project clinics (6 clinics):
Efata, Pumalanga, Nessie Knight Gateway, St. Lucy's Gateway, Canzibe Gateway, and St. Barnabas Gateway.

② The clinics that are remarkably small (gross area is less than 40 m²).

Procurement is planned for 1 unit of the instrument cabinet, and the consultation desk & chair are excluded from the procurement plan.

The project clinics (3 clinics):
Efata, Tina Falls, and Mgwemnyama.

Mobile Clinics

The mobile points (see the following table) are set in areas where the population is small and no clinic is established. Mobile clinics (clinic cars) visit each mobile point every 2~8 weeks and have contributed to medical services as PHC in remote areas with harsh environments. The registered nurses who belong exclusively to the mobile clinics provide medical services of the same standard as clinics. The number of mobile points is shown in the following table.

Table 2-8 Mobile Points

Nyandeni District		Mhlontlo District		KSD District	
Ngqeleni Area Canzibe Hospital	Libode Area St. Barnabas Hospital	Qumbu Area Nessie Knight Hospital	Tsolo Area St. Lucy's Hospital	Umtata Area Umtata General Hospital	Mqanduli Area Zithulele Hospital
10 points	10 points	25 points	27 points	16 points	17 points

Source: Result of field survey

To raise the level of primary medical service in the designated area, it is important and indispensable to improve these mobile clinics. Many of the natives gather in each tribe, and every tribe is scattered over a wide area. To cope with such a situation, mobile clinics are the only answer. Therefore, a minimum procurement of 1 mobile unit is planned for every sub-district health office in this project.

