

CAPITAL APPRAISAL HANDBOOK FOR HEALTH INFRASTRUCTURE: LIMPOPO PROVINCE

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ABSTRACT

Fragmentation and severe inequalities in health status, health infrastructure and services were among the major problems the Limpopo Provincial Government had to deal with when they took office in 1994. Hence, as part of an intensive program of legislative and policy development to reform the health sector, it is the Government's priority to allocate scarce resources between building new health facilities and renovating, upgrading and/or revitalizing existing facilities. Given the main focus of Limpopo Province Department of Health and Welfare (DoHW) on improving the existing facilities in order to make a more effective use of them, the main allocation decision is how to select among the existing facilities and types of service improvements for the annual investment budgets. This Handbook describes a methodology of the evaluation of investment possibilities in order to help public officials in the Department to develop investment projects and health policy interventions that maximize economic and social well-being. The methodology outlined represents a state-of-the-art tool for conducting an integrated financial, economic, stakeholder and risk analysis of capital investments in hospitals, clinics and related policy interventions.

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Chapter 1. Introduction

In the past 10 years South Africa witnessed great development in securing better access to health care and protection against the costs of disease. Given the wide range of activities that are necessary for good health, there are always competing demands and insufficient resources. Thus, establishing priorities, managing scarcity, and getting the maximum value for money spent are central to health policy for the Limpopo Provincial Government.

1.1. Strategic Position Statement for Health

An important endeavor in prioritizing the objectives of the health sector was the Strategic Position Statement for Health in the Limpopo Province. Within the Health Sector Strategic Framework established by the National Health Department, the Strategic Position Statement Project was undertaken by Limpopo Province Department of Health and Welfare (DoHW) from July to October 2001. The process involved an in-depth level review of health and service needs in the province. The planning exercise set out to develop a position paper which provided scenarios: a) to address health needs, b) to achieve sustainable service delivery, c) within various given resource envelopes, c) with a long term vision of an efficient service.

The scenarios were based on a Sustainability Model provided by the National Department of Health. The Sustainability Model enabled modeling of services in relation to population and admission rates, funding and resources, and the design of service delivery options at differing levels of care. The model was analyzed for different scenario options using optimal costs for recurrent and capital costs to ensure sustainability, affordability and quality in health service delivery.

The implications of the preferred scenario; Optimal Needs Driven Scenario (scenario 4 in the plan) are the following:

- 1 Providing Primary Health Care (PHC) level in line with national policy and

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- costing framework. This would require not only building new clinics but also upgrading the existing clinics.
- 2 A sustainable hospital delivery system which provides quality care that is more efficient but also more equitable (in terms of access).
 - 3 Major expansion of emergency medical services and patient transport services.
 - 4 Improving capacity to manage the anticipated service load relating to the HIV/AIDS epidemic both at PHC and at the hospital level.
 - 5 These improvements in health services would require an optimal allocation of resources between development and maintenance of facilities.

The framework of the Strategic Position Statement for the Health Department (SPS) emphasizes efficiency, sustainability, affordability and quality in health service delivery. To achieve a prioritization of the many identified sector investments a systematic cost-effectiveness and/or cost-benefit analyses needs to be carried out for the various potential health projects and interventions.

1.2. Objectives of the Capital Appraisal Handbook for Health

The main objective of the *Capital Appraisal Handbook for the Department of Health and Welfare* is to help public officials in the department to develop and evaluate investment projects and health policy interventions that maximize economic and social well-being in South Africa. It describes how investment possibilities can be evaluated so that the best are chosen and successfully taken from the idea stage through to the implementation phase.¹

The methodology outlined in this Handbook is tailored to be used in a manner consistent with the realities of Limpopo Province. At the same time it represents a state-of-the-art tool for conducting an integrated financial, economic, stakeholder and risk analysis of capital investments in hospitals, clinics and related policy interventions.

¹ The project appraisal methodology employed in the handbook is based on the comprehensive appraisal manual developed by Cambridge Resources International (CRI) for the Limpopo Provincial Government.

Any rational public sector expenditure system requires the consideration of the likely efficiency of the investments before getting approved for implementation. Various methods of analysis are used worldwide to improve the efficiency of the allocation of investments in the health sector, including Cost-Effectiveness Analysis (CEA) and Cost-Utility analysis (CUA). The investment criteria proposed in this handbook follows the same approach to determine the least cost interventions for a given target level of health improvement. It will also provide information on the per unit cost, such as the cost per visit for specific types of service, the cost per patient per day, or the cost per treatment.

The investment appraisal methodology proposed in this Handbook is to provide an evaluation framework for the prioritization of hospital rehabilitation investments and is accompanied by an easy to use computer software package to facilitate the assessment of the relative efficiency of the presumed hospital investments and health interventions.

One of the outputs of the analysis, the annual budget-support needed for the operation of such facilities, is projected in a parameterized manner. Hence, the sensitivity of future budgetary funding required by the facility can be tested for changes in a number of key macroeconomic, community and service delivery variables.

The principles, objectives and information outputs generated by the SPS initiative, combined with the analytical techniques outlined in this manual will assist the department in the future to identify which investments and interventions that will achieve the greatest level of health impact per unit of expenditure and assist program managers to identify ways to improve economic efficiency in the use of the resources available for the health sector in Limpopo Province.

1.3. Overview of the Handbook

The Handbook consists of 5 Chapters. Following the introductory chapter, the second chapter comments briefly on the existing health situation in the Limpopo Province and focuses on the current project selection process. An important emphasis is given to the data generated by the Department of Health and Welfare. The third chapter establishes

the analytical framework for investment appraisal in the health sector, introducing the importance of financial and economic analysis, the scope of Cost Effectiveness Analysis and Cost Utility Analysis and the pertinence of health indicators such as Quality Adjusted Life Years (QALY).

Chapter four establishes the methodology to be applied for the appraisal of capital investments for health care and protection against the cost of illness. It serves as a manual for the use of the standardized format (Project Appraisal Parameterized Spreadsheet Model) for health projects such as new or revitalized hospitals or clinics. Finally, Chapter five contains the recommendations and conclusions.

The Annexes provide an appraisal report of two actual projects, the revitalization of the Jane Furse hospital and the revitalization of the Lebowakgomo hospital, using the proposed methodology and the Project Appraisal Parameterized Spreadsheet Model for the health sector.

Chapter 2. Current Project Selection Process

2.1 Overview

When the new Government took office in 1994, there was fragmentation and severe inequalities in health status, health infrastructure and services. Since then, there has been an intensive program of legislative and policy development to reform the health service.

Although the public sector is largely under-resourced and over-used, it is clear that the majority of South Africans will continue to depend on the public health system for the foreseeable future. Also, the high levels of unemployment and poverty suggest that the majority of citizens will not be able to make any significant contribution towards the cost of their health care.²

Public health spending amounts to 11% of the government's total budget, which is allocated and spent by the nine provinces. How these resources are allocated, and the standard of health care delivered, varies from province to province, however the health problems are similar. For example, a situation and health needs analysis was done in Limpopo during 1999 and finalised early in 2000³, showing that most of the health problems were identical for the different districts.

Limpopo is one of the poorest Provinces in terms of health care funding in South Africa; the per capita funding in health care, (2003 estimate) in the Province is less than 25% of the equitable share of the national budget. Due to the budget constraint and the lack of improvement in quality services, the Province has one of the lowest admission rates nationally (65 people per 1,000 population for non-AIDS acute admission). The Province is also one of the highest in terms of population per health care facility in South Africa. In 2003, the Province had a ratio of 15,345 population per primary Health Care Facility

² Health Sector Strategic Framework 1999 - 2004

³ Health Services Review by HST

(PHC). About 75,5471 people are underserved or have no access to quality health care services in the Province.⁴

There are 536 health care facilities in the Province including 471 clinics, 22 health centers, and 43 Hospitals serving a total of 5.5 million people. Many of these health care facilities reside in remote areas with poor road and communication infrastructure where it is harder to recruit and retain health professionals of all categories.

2.2 Investment Selection System

The allocation of scarce resources between building new health facilities and renovating, upgrading and/or revitalizing existing facilities is a priority for the Provincial Government of Limpopo. Currently, the DoHW is mainly focusing on improving the existing facilities in order to make a more effective use of them. Given this focus of the health sector investment policy, the main allocation decision is how to select among the existing facilities and types of service improvements for the annual investment budgets.

The DoHW's current policy for making such decisions comprise of various steps explained below:

Assessment of Current Physical Conditions of Facilities (step 1).-

The DoHW has developed a set of norms and procedures for determining the conditions of existing health facilities and maintenance and upgrading of these facilities. To evaluate the current conditions, a physical audit report for each clinic and hospital is prepared. These physical audits assess various components of the health facilities on the basis of their suitability to provide health services. Each clinic or hospital building is required to comply with the Terms of Reference Guidelines issued by the DoHW in Limpopo Province for its Capital Works and Planning Program.

⁴ Department of Health and Welfare, South Africa, Strategic Plan 2003/2004

A physical audit examines and evaluates the following characteristics of the health facility: 1) General conditions of existing buildings: This covers the number and functions of rooms by type, the conditions of the external walls and roof, the conditions of ceilings, floors, windows, doors, site fencing and gates. 2) Services and equipment audit reports: These include the water source and delivery system, toilet facilities, lighting and heating arrangements, staff accommodation, and equipment. The condition of existing equipment by type is also evaluated. 3) Size and type of clinics and hospitals: An assessment is made of the suitability of the size and type of a facility for the population's needs. 4) Locality of the existing clinics and hospitals: The physical audit also assesses the suitability of the location of existing health facilities. If the current location is no longer serving the people, a recommendation is made for the relocating of the facility to another area.

Ranking Facilities based on Physical Audit (step 2).-

Based on physical audit reports, the DoHW ranks the existing clinics and hospitals into four groups in order of priority for rebuilding and upgrading: (a) facilities that are condemned, (b) facilities that are in poor condition, (c) facilities that are in good condition, and (d) facilities that are in very good condition. Since, the funds available for investment are not adequate to finance all of the rebuilding and upgrading needs, priority is given to facilities that are in condemned or in poor condition.

Selection of Health Facilities for Upgrading (step 3).-

Among all the clinics and hospitals in poor condition, the selection of specific health facilities for improvements is made based on the following factors: 1) Equity considerations: Facilities in the least developed or underserved areas in the Province are given priority. Two of the districts (Sekhukune and Bohlabela) in the Province are identified as being the least developed and underserved. This consideration is important from viewpoint of equity in access to health services. 2) Need or demand considerations: The DoHW is trying to increase coverage of health care to as many people as possible. Therefore, the population size and the health profile of people play a role in determining

the level of improvements in clinics and/or hospitals. For example, clinics with larger population settled within the clinic area are given priority. Similarly, the DoHW also gives priority to areas with higher incidence of diseases such as Tuberculosis, Malaria, Malnutrition, Diarrhea and HIV/AIDS. 3) The selection process also takes into account the accessibility of the nearest clinics and hospitals, and to some extent, the selection of clinics and hospitals is also influenced by political considerations.

Chapter 3. Analytical Framework

The analytical framework developed in this Handbook outlines the main conceptual and practical issues of health care project valuation. The proposed appraisal framework includes a Financial Cost Effectiveness Analysis of investment decisions and an Economic Cost Utility Analysis that employs a health impact indicator, the QALY (Quality Adjusted Life Years), as a measure to evaluate the economic cost of achieving improvements in the overall health of the Province's residents.

3.1 Financial Analysis

The financial analysis of a project helps determine the financial sustainability of the project and the key risks in terms of the financial costs of achieving a given outcome. The costs and revenues projections, along with the financing arrangements are the building blocks for the financial analysis of a project.

For investments in the health care sector that are being considered for private sector involvement, the financial analysis will tell us if a project is financially viable and potentially attractive to private investors. Alternatively in the case of public health projects, a financial analysis is important in order to be able to determine the most efficient option in terms of financial costs for achieving a given objective. Such an analysis is also useful to identify the sources and magnitudes of budgetary risks that such investments may entail.

Once the spending priorities are defined, the scarce budget funds can be allocated among projects based on the least cost alternatives for achieving the given priority objectives. Projects of lower priority and smaller positives outcome are effectively shifted to the next budget period, where another comparative evaluation will take place.

3.2 Cost-Effectiveness Analysis

Investments undertaken in the public health sector have a common feature: they are oriented to serve the community, with a large number of patients who do not pay for their treatment or pay less than the respective costs. For public health projects, where it is usually not practical to carry out a full cost benefit analysis, a Cost-Effectiveness Analysis (CEA) is often employed. This method can be carried out in such a way that it captures only the most important benefits, and still be a reasonable basis for making effective decisions

A pure cost-effectiveness analysis looks at a single quantified, but not monetized, effectiveness measure of the cost per unit. For example, the cost in Rand per patient day of service provided. A healthcare project that is less costly at providing an equivalent quality of per patient day service is, therefore, preferable to more expensive alternatives. Thus, the CEA does not actually measure any other benefit than the single defined quantified measure.

The cost-effectiveness analysis first computes cost-effectiveness ratios of different alternatives, and then compares the resulting ratios so that the most efficient option is chosen. CEA ensures technical efficiency when achieving the desired outcome .i.e. lives saved, patients treated, patients discharged. One way of computing the effectiveness is to obtain a ratio of costs to its benefit, for example Rand per patient-day for people using hospital services.

If there are a number of alternative solutions to providing health treatment, then the costs of each (C_i) are divided by the benefits (E_i):⁵

$$CE_i = \frac{C_i}{E_i}$$

This ratio can be interpreted as the average cost per unit of effectiveness. The selection of projects carried out according to this cost effectiveness criterion, would prefer those with the lowest ratios.

⁵ Boardman, A.E., et. al, (2001), p. 438.

In a number of cases, the decision makers need to compute marginal cost-effectiveness ratios. Often, this need arises when a new, more costly but also more effective, alternative is compared with the existing situation. In terms of computation, the numerator now contains the difference between the cost of the new (with project) and old (without project) situation alternatives, and the denominator is also the difference between the effectiveness of the new and old alternatives:⁶

$$\text{Marginal CE}_i = \frac{C_i - C_o}{E_i - E_o}$$

This ratio can be interpreted as the incremental cost per unit of effectiveness. When there are several alternatives available, the marginal cost-effectiveness ratio can be used to rank the new measures versus the existing one.

It is at this point where we need to be elaborate on what is meant by the without project case. The first distinction is that the without situation is not the situation that could exist before the new project was introduced. In some cases of hospital revitalization we would expect that the level of services provided in the without project case would decline over time, due to the deterioration of the existing facilities. In other cases there might be some growth in service provision but perhaps the quality of service would decline. Hence, it is critical for the evaluation of the project that the without project situation is clearly defined over the same length of life as is expected to occur for the with project case.

Discounting is also important, many capital projects have large investment costs at the beginning and then their benefits are spread over many years. To properly compare the benefits and costs over time, the benefits and costs that occur in distant years have to be discounted back to a common base year in order to make a meaningful comparison of alternatives. Because cost effectiveness analysis does not place a monetary value on the benefits, the project analyst has to discount the quantity amounts of the effectiveness measure itself. In other words, both the costs and units of effectiveness must be

⁶ Ibid, p. 439.

discounted by the same rate if the CEA is to be done correctly. The only addition to what has been discussed in previous sections is that the costs and effectiveness are now being discounted:

$$CE_i = \frac{PV \text{ of } Costs_i}{PV \text{ of } Effectiveness_i}$$

The question of what is the appropriate discount rate to use is often raised. For example, proponents of health projects have argued for low rate of discount to be used when comparing alternative health projects. However, there is no sound economic reason to use any discount rate other than the economic opportunity cost of funds, which in the case of South Africa is a real rate of 11.0 percent⁷.

3.3 Economic Analysis

While the financial analysis of a health project focuses on its financial effectiveness, an economic analysis deals with the ultimate impact of the project on the well being of the entire society. First, the costs should be measured in terms of their economic values that may differ from their financial values. Second, the benefits should be measured in a way that captures several dimensions of the impact of the health service. For example the number of patient days or services supplied does not capture the impact of the additional number of years of life that will be experienced or the number of years of pain and suffering that have been eliminated. Consequently, in an economic analysis, the concern is with economic benefits and costs, and not just cash receipts and expenditures.

The main problem in trying to apply CBA analysis in the health sector is the correct valuation of benefits. Because the general goal of health projects is to increase the quality and length of life, it is difficult to value these outcomes in monetary units. Possible health outcomes that need to be addressed include increased life expectancy, decreased

⁷ “Integrated Investment Appraisal: Concepts and Practice”, Prepared for Department of Financial and Economic Development, Limpopo Provincial Government, South Africa, Cambridge Resources International, Cambridge, USA, March 2004.

morbidity, reduced disability, improved quality of life, averted future medical costs, and increased productivity.⁸

In the 1950s and 1960s benefits of health projects were often valued using a human capital approach. The benefit of an intervention was assumed to be the present value of an individual's future earnings. This approach discriminates against those who receive lower wages and those not in the workforce, such as the elderly, persons occupied with family care, housework, and children. Critics have argued that linking the value of additional life years only to economic productivity is not legitimate, and moreover, that such an approach does not take into account the very essence of CBA: the importance of individual utility in the assessment of benefits.⁹ These difficulties with the measurement of the economic benefits from health investments in terms of monetary units has lead to the development of cost-utility analysis where the outcomes are measured as a change in an index of health achievement.

3.4 Cost-Utility Analysis

Cost-Utility Analysis (CUA) is a natural extension of cost-effectiveness analysis, and the difference is really the accounting for the benefits. Cost utility analysis forces the analyst to compile a composite index of outcomes, i.e., utility level as a measure of benefits. Each type of benefit (B_j) would be assigned its relative importance, or weight (w_j), in deriving the index of outcomes.

Health programs result in multiple benefits even if a single objective is actually targeted. Because a cost-benefit analysis is not appropriate, and because simple cost-effectiveness analysis omits important side benefits, cost-utility analysis provides a convenient tool of handling these problems.

In this Handbook a cost-utility approach is taken to measure the economic benefits of improving the service delivery of hospitals. Of the various versions of the health

⁸ World Bank, (2000), Normative Analysis for Health Policy and Projects, Ch. 9, p. 239

⁹ Hauck K., et. al., (2003), p.7, (The Economics Of Priority Setting For Health Care, WB)

indicators that could be employed, we choose to use the Quality Adjusted Years of Life (QALY) measure of health outcomes. It was chosen because of its ease of understanding, it is used in investment decision making by departments of health worldwide, and also because this measure of health outcomes has been previously estimated in considerable detail for South Africa and Limpopo Province.¹⁰

3.5 Quality-Adjusted Life-Years (QALY)

The conceptual framework behind the QALY index is simple, it is an index that assumes a weight of 1 corresponds to perfect health and a weight of 0 corresponds to a health state judged equivalent to death. The index itself is a measure of the relative utility one receives from one more year of life lived in a particular state of health. In order to calculate the total number of QALYs value from an investment in a health facility or an intervention it is sufficient to multiply these utility values of the given states of health by the years lived in the corresponding states. Because the total number of QALYs captures changes in both the quality of life (morbidity), as well as length of life (mortality), this can serve as the outcome measure for a wide range of health interventions or capital investments in the health sector.

The following example will illustrate the typical issues involved in the construction of a QALY index.¹¹ Suppose the decision makers have to choose among three alternatives mutually exclusive prenatal programs. Under the existing conditions, no babies with a particular medical condition are born alive, program A. Program B, focused on prevention of this condition, will likely result in five babies being born alive per year but with serious disabilities. Alternatively, program C will result in two live births but with low levels of disability. In order to evaluate the alternatives, a comparison in terms of

¹⁰, Bradshaw D, Laubscher R., Igumbor EU (2003), Mortality Profile from Registered Deaths for Limpopo Province, South Africa 1997-2001. An alternative measure that is frequently used to measure the economic impact of health projects in developing countries is the Disability Adjusted Life Year (DALY). This measure places greater emphasis on the impact of disease on the loss of productivity due to both morbidity and mortality.

¹¹ The example that follows is adopted from Boardman, et al., (2001), p. 445.

quantity and quality must be made. Table 3.1 presents the basic QALY format in terms of additional years and their quality.

Table 3.1
The Basic QALY Format

Health Status (H)	Additional Years of Life (Y)				
	Y₁	Y₂	Y₃	Y₄	Y₅
H₁	(Y₁H₁)^A	Y ₂ H ₁	Y ₃ H ₁	Y ₄ H ₁	Y ₅ H ₁
H₂	Y ₁ H ₂	Y ₂ H ₂	Y ₃ H ₂	(Y₄H₂)^B	Y ₅ H ₂
H₃	Y ₁ H ₃	Y ₂ H ₃	(Y₃H₃)^C	Y ₄ H ₃	Y ₅ H ₃
H₄	Y ₁ H ₄	Y ₂ H ₄	Y ₃ H ₄	Y ₄ H ₄	Y ₅ H ₄
H₅	Y ₁ H ₅	Y ₂ H ₅	Y ₃ H ₅	Y ₄ H ₅	Y ₅ H ₅

The columns show additional years of life, from a short Y₁ to a much longer duration Y₅. The rows represent the health status from the poorest H₁ to the best state H₅. Now, presume that all the three alternative policies have the same costs, and there is no uncertainty about the resulting years of life gained and health condition. Then, assume that the existing program that is already in place corresponds to the fewest years and worst health status, Y₁H₁. This situation is challenged by program B, which corresponds to Y₄H₂. At the same time, alternative C will be able to achieve a QALY level of Y₃H₃.

Given that the costs of the three alternatives are equal, the first conclusion is that programs B and C are both superior to the existing situation A. This is simply because any of the two ensure longer years and better health status than Y₁H₁. However, the hard choice between B and C still remains. The question here is really what is valued more: additional years of life or better health status. While additional years of life are easily quantifiable, the meaning of health status is not universally defined.

In fact, a vast amount of effort has gone into research on defining a health status. Usually, health status is defined in terms of a composite index, covering most of the physical and psychological conditions. Then, every health aspect included in the index is rated on some scale from the worst to the best state. Finally, a single index is constructed from all the aspects. For instance, one of the most comprehensive classifications is based on four

dimensions: physical function (mobility and physical activity), role function (ability to care for oneself), social-emotional function (emotional well-being and social activity), and health problem (including physical deformity).¹² The usefulness of QALY index in cost utility analysis depends on the reliability of the methods used to define and to measure health status.¹³

Fortunately, considerable high quality work has been done for the case of South Africa. South Africa's National Burden of Diseases study has already prepared a classification of diseases and injuries appropriate to assess the burden of ill-health in the country¹⁴. This classification is an adaptation of the Global Burden of Disease list that divides the causes of death into three broad groups: the pre-transitional causes, non-communicable diseases and injuries¹⁵. The groups are further divided into categories and then levels based on similarities in etiology and/or the required intervention.¹⁶ From this South African National Burden of Diseases study (Bradshaw et al, 2003) and the Catalog of Preference Scores, which contains the ranking for different types of medical conditions, we have all the data needed for the calculation of QALYs to measure the impact of health care interventions in the Province of Limpopo.

When these outcome measures are considered relative to the cost required to generate them, a basis has been created for comparing the efficiency of the various projects and programs financed by the health budget. Hence, the application of cost utility analysis will allow one to both prioritize investments in a single area such as hospital revitalization as well as allow one to compare the efficiency of expenditures in this area with other health interventions such as drug therapy.

It should be noted that QALY calculations are practical for conducting an analysis either in Financial or Economic terms. When the discounted economic costs are compared with

¹² Torrance, G.W., et. al, (1982), pp. 1043-1063.

¹³ Froberg, D.G., and Kane, R.L, (1989), pp. 675-685.

¹⁴ Bradshaw, D., et al. (2003), Initial Burden of Disease Estimates for South Africa, 2000.

¹⁵ Murray CJ, Lopez AD (1996). The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020.

¹⁶ Bradshaw, D., et al., (2003), p. 2, Mortality Profile from Registered Deaths for Limpopo Province, South Africa, 1997-2001

the discounted QALYs, we obtain a cost per QALY expressed in economic prices. This value measures the economic resource cost in Rand to obtain one additional QALY for society. On the other hand, when financial costs are used, the measure will reflect the number of Rand that will have to be spent from the government budget to obtain an additional QALY.

The use of a QALY as a measure of the severity of the state of someone who has been treated in the facility for a particular disease or health condition provides us with a method of aggregating the impact of the health interventions provided. However the QALY is only one of the pieces of information needed to evaluate the impact on health of treatment. A key set of variables is the change in health status that such treatment provides. This is normally measured as the expected change in life years arising from the treatment of specific health conditions by a specific method of treatment. This information on the measurement of different treatments needs to be provided, by impacts on the number of life years gained, by the Department of Health services and the medical literature in the different areas of medical specialization.

3.6. Applications

This analytical framework will be applied to investments in the area of hospital refurbishing and renovation in Limpopo Province. The financial analysis will serve to measure the present value of the financial costs per patient bed day for the hospital upgrading investments under consideration. This measure can be used to rank the different alternatives or a cut off value can be applied by the Department as a criterion for proceeding with the investment.

For the economic analysis an estimate will be made of the present value of the economic cost per QALY of health improvement brought about by investments in hospital facilities. This index can be used both to compare with alternative investments in the hospital sector as well as to make comparison with the effectiveness of expenditures on other health care interventions. For example, the cost per QALY of expenditures made

on hospital improvements can be compared with the cost per QALY of drug therapies or inoculations. To get the maximum impact on health improvement in the Province, those activities that have a low cost per QALY should be given priority over those whose cost per QALY is higher.

For the Handbook case studies will be developed for two hospital replacement projects. These cases of projects in Limpopo Province will serve as a foundation for future capital appraisal work to be carried out by the Department of Health.

Chapter 4. Framework for Applications

In order to evaluate which investments or health policy interventions are the most beneficial and therefore should be undertaken, a standardized format for the analysis of a project has been developed. The standardized format constitutes a Project Appraisal Parameterized Spreadsheet Model (PAPSM) for the Health Sector, which is capable of calculating project's outcomes and investments decision criteria. The focus of the PAPSM is to be able to deliver all of the indicators and results required to appraise a health project with only a modest quantity of input data.

The PAPSM is a Microsoft Excel Spreadsheet model designed to estimate the cost in Rand for each unit of health improvement delivered by an investment, revitalizing or building a clinic or a hospital. Although the PAPSM emphasizes simplicity, requiring a limited amount of data that is already generated today by the health department, it presents a complete set of economic and financial results necessary to take capital investment decisions.

The PAPSM is made up of two separate computer based evaluation models, PAPSM (I) and PAPSM (NI). The first model, PAPSM (I), is applicable to the evaluation of investments that are incremental in nature, it is used when a health facility or health service delivery system already exists in the area. The investment decision is whether the existing facilities should be revitalized or expanded. In these cases the specification of the “without project” case needs to be made as well as the “with project” situation in order to evaluate the incremental impact of the new investments.

If it appears that an expansion or upgrading of the existing facilities is the appropriate decision, the PAPSM (I) model can be then used to determine the best way to do it. The model is an effective tool to find the investment strategy that would make the largest contribution to the provision of the incremental health services provided.

The second model, PAPSM (NI), is applicable for the evaluation of stand alone projects. These are projects to be undertaken when there are no existing facilities of the nature

being improved. In this sense they are not incremental because the “without project” case means that this service would not be provided for this target population in this area. Due to the nature of the situation the results of the analysis would tell us the costs per unit of the service provided. Alternatively, it can be used to evaluate whether the investment made in a local area will benefit the health users by reducing the cost to the people of seeking such services elsewhere.

4.1. Outputs of the Health Sector PAPSM

Once the project variables are introduced the PAPSM consequentially calculates the following Tables: Number of Patients (In-patients and Out-patients) expected for every year of the project, Expected Revenue and Fees Schedule, Expenses in Medicines and Supplies, Administrative Expenses, Minor Equipment outlays, Working Capital requirements and impacts, Labor Costs, projected Domestic (Rand) and Foreign (\$US) price levels and consistent Inflation and Exchange Rate estimates and a summary of Capital Investments. These Tables are in turn used to calculate the cash flow statements.

The model is designed to take into account five different types of patients (variables), which can have different number of beds assigned, average daily admission, average length of stay and tariff schedules. The Annex presents a detailed example of the flexibility of the PAPSM. It is used to evaluate two different revitalization projects. The appraisal of one of them, the revitalization of the Jane Furse hospital, is divided by accommodation of patients (medical, tuberculosis, surgery, maternity and pediatrics) while for the second project, the revitalization of the Lebowakgomo hospital, the whole analysis differentiates the patients by income/wealth and how they are charged for their treatments (H0, H1, H2, H3 and Private). Thus, the model allows for a dynamic differentiation between 5 categories of patients, providing outcomes for each category.

The PAPSM calculates cash flow statements in nominal and real values (Rand), in financial and economic values for: a.) the revitalized hospital ("with project"), b.) the current situation "without project" and c.) for the incremental project (a. minus b.). From these flows of costs and revenues, the level of budgetary support required

(annually) by the facility is also projected over its future life. This projection is entirely parameterized and can be adjusted for the growth of patients days, average length of stay, rates of inflation and all the rest of the variables that are Input variables in of the model.

An important result calculated by the model is the Cost-Effectiveness Outcome (C/E), which indicates how many Rand are spent for every patient-day of service provided, by the revitalized facility, the current facility situation and the incremental number of patient days created by the revitalization project. This indicator deals with how efficient is the current facility and the estimated per patient cost. The value of this variable for a particular facility should be compared to a norm set by the department of health of Limpopo Province or the National Department of Health. If the cost per patient-day for a particular new facility is below this norm cost per patient-day for the particular type of facility then this project should be implemented.

Another important variable calculated as a decision criteria variable (for the project selection process) is the Cost-Utility Outcome (C/U), which indicates how many Rand are spent to generate one QALY, by the revitalized facility, the current facility situation and the incremental investment. Again the cost per QALY is variable for which the department of health, over time, should develop norms. Health interventions with cost per QALY greater than the norm should be given a lower priority for implementation than those interventions with cost per QALY lower than the norms that have been set.

The PAPSM calculates the C/E indicator (cost per patient day) for the financial analysis, while both indicators, C/E and C/U (cost per QALY), for the economic analysis.

4.1.1. Financial Results

The results provided by the PAPSM encompass the following: Present Value of Inflows and Outflows, Net Present Value (NPV), Patient Days, Funding per Patient Day and Gross Costs per Patient, for each, the revitalized facility, the current situation without the project and the incremental analysis. Through these results the analyst should be able to decide the relative priority of investing in a particular revitalization project.

The level of the budgetary support needed in each year of the facilities operation, with and without revitalization project, is also estimated by the model. The values for the funding are estimated as function of the key variables that impact the operation of the facility.

In Table 17.- the PAPSM shows the financial results of the project: The Present Value (PV) of Inflows (column 1) represents the accumulated revenues from tariffs and rates paid by Out-patients and In-patients during the life of the project. Likewise, the PV of Outflows (column 2) includes all investment costs and total expenses during the life of the project. The NPV shows the overall performance of the project, generally a positive financial NPV would signal that it would be possible for an investor to carry out the project, in the public health sector this number is generally negative, thus the negative NPV figure will be equivalent to present value of the budget outlays required over the life of the project. These budgetary outlays are also estimated on an annual basis.

The Number of Patients Days shows how many patients served the hospital or clinic every day during the life of the project, this figure (column 4) is also expressed in present value terms (discounted).¹⁷

The total costs per patient-day (column 6) is one of the most commonly used cost-effectiveness measures, since it indicates the cost in Rand per patient every day. In theory when comparing facilities that deliver the same type of services, a more efficient hospital or clinic should spend less Rand for every patient-day, and such project should be prioritized. This factor is helpful for decision making, however its importance as an investment criteria should not be overstated; since this indicator does not take into account improvements in health or the changes in the average number of days of stay per patient visit.

¹⁷ In the chapter “Analytical Framework” the discounting rationale is discussed in detail.

Table 4.1. (Table 17.- PAPSM)

TABLE 17.-
FINANCIAL RESULTS:
LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT
All figures in Present Values (Year 0 values)

	Inflows (Rand)	Outflows (Rand)	NPV (Rand)	Patient Days (#)	Funding Per Patient Day (Rand)	Total Costs Per Pat. Day (Rand)
	1	2	3	4	5	6
A. REVITALIZED HOSPITAL ("With Project")	73,348,450	680,311,473	-606,963,023	642,046	945	1,060
B. CURRENT SITUATION ("Without Project")	31,313,778	920,015,039	-888,701,261	528,247	1,682	1,742
C. INCREMENTAL ANALYSIS (C = A - B)	42,034,672	-239,703,566	281,738,238	113,799	-737	-682

The Funding Per Patient (column 5) is a cost-effectiveness measure since it represents how many Rand on average needs to be spent by the State for every patient day in the specific facility under consideration. This figure can be used as an input in the department's forward financial planning. In this case the revitalized hospital is so much more efficient that the department's budget would get some relief as compared to the without project situation.

Table 4.1. above shows the results for the revitalization project of the Lebowakgomo hospital: The present value of inflows illustrates that for the current facility (Groothoek) an average of 31 million Rand could be expected to be collected in fees and tariffs during the life of the project, while for the case with project (Lebowakgomo) this same value is expected to be around 73 million Rand. The marked difference between this two results is mainly due to the fact that it is expected that the revitalized hospital will treat more patients during the length of the project and to the fact that it is planned that the new facility will update all patients records allowing to properly classify its patients, hence shifting them, for charging purposes, to upper income categories, especially current H0 patients to higher categories such as H1 and H2.

The amount of funding per patient day also illustrates this fact; the revitalized facility collects, on average, a larger amount of fees from treated patients, since the average funding amount for the revitalized hospital amounts to 945 Rand, while for the current facility the State provides larger average funding of 1,682 Rand per patient day.

The present value of expenditures are 920 million Rand for the current facility (Groothoek) for the duration of the project, while for the case with project (Lebowakgomo) the total value of investment costs and operating expenses are 680 million Rand. The fact that the case "with project" has lower outflows (although this present value includes the investment costs) is mainly due to the fact that the current facility is large thus, requiring a higher number of employees and a higher level of expenditures.

The present value of number of patient-days to be treated by the existing facility without the project over the same period as the project's life 528,247 (years 2004-2026), while the present value of the expected number of patient-days for the revitalized facility amounts to 642,046 patient-days for the same period.¹⁸ Given that the present value of costs is larger for the current facility and its number of patients treated during the life of the project is lower than for the revitalized facility, it follows that the cost per patient day is lower for the revitalized hospital. While the average cost per patient day is 1,742 Rand for the current facility, for the revitalized hospital it amounts to 1,060. We can conclude that by undertaking the project Limpopo Province will save on average 682 Rand for every patient-day of service provided, for the duration of the project's life.

The results for the Jane Furse Hospital Revitalization project are also concluding. Table 4.2. shows the expected results for the capital investment in such undertaking:

Table 4.2. (Table 17.- PAPSM)

TABLE 17.-
FINANCIAL RESULTS:
JANE FURSE HOSPITAL REVITALIZATION PROJECT
All figures in Present Values (Year 0 values)

	Inflows (Rand)	Outflows (Rand)	NPV (Rand)	Patient Days (#)	Funding Per Patient Day (Rand)	Total Costs Per Pat. Day (Rand)
	1	2	3	4	5	6
A. REVITALIZED HOSPITAL ("With Project")	99,794,413	501,848,807	-402,054,394	631,537	637	795
B. CURRENT SITUATION ("Without Project")	53,153,762	308,941,751	-255,787,989	374,346	683	825
C. INCREMENTAL ANALYSIS (C = A - B)	46,640,651	192,907,057	-146,266,406	257,191	-47	-31

¹⁸ It is assumed that the revitalized facility (with project) will have an annual percentage increase in admission of 2% while the situation without the project will face a decrease of 2% per year.

The present value of inflows illustrates that for the current facility an average of 53 million Rand could be expected to be collected in fees and tariffs during the life of the project, while for the case with the revitalization project this same value is expected to be around 100 million Rand. The manifest difference between these two results is mainly due to the fact that it is expected that the revitalized hospital will treat more patients during the length of the project.

In contrast to the Lebowakgomo revitalization project, the Jane Furse Hospital revitalization shows higher outflows for the case “with project”. The present value of outflows is 308 million Rand for the current facility (without project) for the duration of the project, while for the case with the project the total value of investment costs and operating expenses is 501 million Rand. The fact that the case “with project” has higher outflows is directly related to the revitalization investment costs and slightly larger expenditures.

Although the costs are larger for the case “with project”, the average funding per patient day is lower. Due to more patients being treated during the life of the project, the amount of funding per patient day for the revitalized facility amounts to 795 Rand per-patient day, while for the current facility the State provides a larger average subsidy of 825 Rand per patient-day.

It is expected that the present value of the number of patient-days to be treated by the current facility during the life of the project amounts to 374,346 (years 2004-2026), while the present value of number of patients expected by the revitalized facility amounts to 631,537 patient-days over the same period. Given that the number of patient-days during the life of the revitalized facility is considerably larger, it follows that the cost per patient day is lower for the revitalized hospital. While the average cost per patient-day is 825 Rand for the current facility, for the revitalized hospital it amounts to 795. We can conclude that by undertaking the revitalization of the Jane Furse Hospital Limpopo Province will save on average 31 Rand for every patient, every day, over the duration of the project’s life.

While Table 17 of the PAPSM shows the aggregated financial results, Table 18 presents the yearly financial results: Projected Revenues from Fees and Tariffs, Projected Investment Costs and Projected Recurrent Expenses for: a.) the revitalized hospital ("with project"), b.) the current situation "without project" and c.) for the incremental project (a. minus b.). The following Tables 4.3. and 4.4. show the yearly financial results for both, the Lebowakgomo Revitalization and Jane Furse Hospital Projects:

Table 4.3.- (Table 18 PAPSM)

TABLE 18.-
YEARLY FINANCIAL RESULTS
LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT
 All figures in Nominal Rand (5% annual inflation rate)

	Year	2004	2005	2006	2007	2008	2009	2010	2025	2026
All figures in Nominal Pounds (£) Annual Inflation Rate										
A. REVITALIZED HOSPITAL ("With Project")										
Number of Patient-days		60,190	63,832	67,967	72,017	72,465	72,921	73,387	80,432	80,974
Projected Revenues from Fees and Tariffs		4,853,843	6,786,688	7,800,455	8,787,375	9,444,979	10,109,258	10,820,385	27,805,023	29,614,191
Projected Investment Costs		83,759,000	26,067,300	13,685,333	4,557,570	9,724,050	1,021,025	-	-	-
Projected Recurrent Expenses		74,555,701	56,906,410	60,210,600	63,940,655	67,828,407	72,000,512	76,430,915	187,520,358	199,118,932
B. CURRENT SITUATION ("Without Project")										
Number of Patient-days		57,443	60,316	63,050	65,651	64,338	63,051	61,790	45,636	44,723
Projected Revenues from Fees and Tariffs		3,361,559	3,675,108	4,035,281	4,413,253	4,564,783	4,697,161	4,833,379	7,421,325	7,636,544
Projected Recurrent Expenses		95,694,897	101,093,295	106,996,802	113,183,210	119,296,412	126,554,343	133,850,992	311,749,956	329,917,016
C. INCREMENTAL ANALYSIS (C = A - B)										
Number of Patient-days		2,747	3,517	4,917	6,366	8,127	9,870	11,597	34,796	36,250
Projected Revenues from Fees and Tariffs		1,492,285	3,111,580	3,765,174	4,374,122	4,880,197	5,412,097	5,987,006	20,383,698	21,977,647
Projected Investment Costs		83,759,000	26,067,300	13,685,333	4,557,570	9,724,050	1,021,025	-	-	-
Projected Recurrent Expenses		(21,139,195)	(44,186,884)	(46,786,203)	(49,242,556)	(51,468,005)	(54,553,831)	(57,420,076)	(124,229,598)	(130,798,084)
D. PROJECTED BUDGETARY SUPPORT REQUIREMENTS										
A. REVITALIZED HOSPITAL ("With Project")		153,460,858	76,187,022	66,095,477	59,710,849	68,107,478	62,912,279	65,610,530	159,715,335	169,504,741
B. CURRENT SITUATION ("Without Project")		92,333,338	97,418,187	102,961,521	108,769,957	114,731,630	121,857,181	129,017,613	304,328,631	322,280,472
C. INCREMENTAL ANALYSIS (C = A - B)		61,127,520	(21,231,165)	(36,866,044)	(49,059,108)	(46,624,152)	(58,944,902)	(63,407,082)	(144,613,296)	(152,775,731)

Table 4.4.- (Table 18 PAPSM)

TABLE 18.-

YEARLY FINANCIAL RESULTS

JANE FURSE HOSPITAL REVITALIZATION PROJECT

All figures in Nominal Rand (5% annual inflation rate)

Year	2004	2005	2006	2007	2008	2009	2010	2025	2026
A. REVITALIZED HOSPITAL ("With Project")									
Number of Patient-days	50,018	56,088	65,709	70,495	71,563	72,653	73,655	85,094	85,542
Projected Revenues from Fees and Tariffs	7,513,038	8,766,888	10,892,609	12,242,985	13,107,023	13,982,109	14,901,057	36,999,894	39,190,738
Projected Investment Costs	-	43,387,668	88,374,726	-	-	-	-	-	-
Projected Recurrent Expenses	35,844,684	39,595,810	45,840,403	48,664,253	51,595,634	54,760,086	58,116,813	142,036,674	150,767,561
B. CURRENT SITUATION ("Without Project")									
Number of Patient-days	40,708	42,743	44,681	46,524	45,593	44,681	43,788	32,340	31,694
Projected Revenues from Fees and Tariffs	5,789,689	6,329,722	6,950,056	7,601,046	7,862,029	8,090,028	8,324,639	12,781,918	13,152,593
Projected Recurrent Expenses	31,094,597	32,922,446	34,879,745	36,928,885	38,388,254	41,257,817	43,648,145	102,091,005	108,072,166
C. INCREMENTAL ANALYSIS (C = A - B)									
Number of Patient-days	9,310	13,345	21,028	23,971	25,970	27,972	29,868	52,754	53,849
Projected Revenues from Fees and Tariffs	1,723,349	2,437,166	3,942,553	4,641,938	5,244,994	5,892,081	6,576,418	24,217,976	26,038,144
Projected Investment Costs	-	43,387,668	88,374,726	-	-	-	-	-	-
Projected Recurrent Expenses	4,750,087	6,673,364	10,960,657	11,735,368	13,207,379	13,502,269	14,468,668	39,945,669	42,695,395
D. PROJECTED BUDGETARY SUPPORT REQUIREMENTS									
A. REVITALIZED HOSPITAL ("With Project")	28,331,646	74,216,591	123,322,520	36,421,269	38,488,610	40,777,977	43,215,756	105,036,780	111,576,823
B. CURRENT SITUATION ("Without Project")	25,304,909	26,592,724	27,929,689	29,327,838	30,526,225	33,167,789	35,323,506	89,309,088	94,919,573
C. INCREMENTAL ANALYSIS (C = A - B)	3,026,738	47,623,866	95,392,831	7,093,430	7,962,385	7,610,188	7,892,249	15,727,693	16,657,251

4.1.2. Economic Results

The economic results provided by the PAPSM encompass the following: Present Value of Outflows, Number of Patient Days, Cost per Patient Day, total QALY'S, and Cost Per QALY, for each of the revitalized facility, the current facility situation and the incremental analysis. Since these figures are in economic values, they represent the relevant figures for the Country and its departments of health to able to decide if investing in a particular revitalization project is a priority.

In the same manner as for the financial results, Table 24.- shows an economic result; the Present Value (PV) of Outflows, the main difference is that the outflows show real resource costs, for investments and expenses during the life of the project, for the South African economy.

The Number of Patients Days measure is, naturally, identical to the figure for the financial analysis, however, the Cost Per Patient Day is an economic cost-effectiveness measure, which represent the real economic resources spent by the Country for every patient-day.

The QALY'S and Cost Per QALY measures represent a first approach at measuring the real benefit, or utility, for society, generated by securing better access to health care and protection against the costs of disease. As explained in the analytical framework of this document, the number of QALYs measure the utility of both, the additional years of life and the quality of life during these years, thus the figure in Table 24.- of the PAPSM shows the accumulated years adjusted for quality for all discharged patients during the life of the project.

In this analysis we have been using only an illustrative set of data that expresses on a per discharged patient basis, the impact of the different health care services provided through the hospital into the number additional life years that result from each of the services provided. Hence for illustrative purposes the same sets of coefficients per treatment type are used for treatments in both situations, with and without the revitalized facility. Thus,

the accuracy of the analysis using this framework will be improved as this medical information is enhanced by the DoHW of Limpopo Province over time.

Table 4.5.- (Table 24.- PAPSM)

TABLE 24.-

ECONOMIC RESULTS

LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT

All figures in Present Values (Year 0 values)

	Outflows (Rand)	Patient Days (#)	Cost Per Patient Day (Rand)	QALY'S (Life years)	Cost Per QALY (Rand)
	1	2	3	4	5
A. REVITALIZED HOSPITAL ("With Project")	619,585,545	642,046	965	493,556	1,255
B. CURRENT SITUATION ("Without Project")	845,537,052	528,247	1,601	372,326	2,271
C. INCREMENTAL ANALYSIS (C = A - B)	-225,951,507	113,799	-636	121,230	-1,016

Table 4.5.- shows the results for the revitalization project of the Lebowakgomo hospital: The present value of the real resource costs for the economy (economic outflows) for the current facility (Groothoek) amounts to an average of 845 million Rand, while for the revitalized case (Lebowakgomo) this same value is expected to be around 619 million Rand. The fact that the case "with project" has lower outflows, although this present value includes the investment costs, is mainly due to the fact that the current facility is larger thus, requiring a higher number of employees and higher levels of expenditures.

The present value of the number of patient-days serviced by the current facility during the life of the project is 372,326 (2004-2026), while the expected number of patients for the revitalized facility amounts to 493,556 patient-days over the same period. Given that the present value of costs is larger for the current facility and the number of patients treated daily during the life of the project is lower for the revitalized facility, it follows that the cost per patient day is lower for the revitalized hospital. While the average economic cost per patient day is 1,601 Rand for the current facility, for the revitalized hospital it amounts to 965. We can conclude that by undertaking the revitalization of the Lebowakgomo Hospital, Limpopo Province will save resources equivalent to 636 Rand for every patient-day over the duration of the project's life.

In terms of Quality Adjusted Life Years, the number of life years obtained by the different types of treatment amount to 372,326 for the current facility during the life of the project (years 2004-2026), while the life years obtained by the revitalized facility amount to 493,556. On average the revitalization project will increase the quality adjusted years of life of the population by 121,230 over the current situation.¹⁹

Knowing that the present value of costs is larger for the current facility and that the number of life years during the life of the project is higher for the revitalized facility, it follows that the cost per quality adjusted year of life is lower for the revitalized hospital. While the average economic cost per QALY is 2,271 Rand for the current facility, for the revitalized hospital it amounts to 1,255. We can conclude that by undertaking the project the Limpopo Province will save resources equivalent to 1,016 Rand for every life year gained by its interventions in the revitalized facility.

The results for the Jane Furse Hospital Revitalization project are also similar. The following Table shows the expected results for the capital investment in such undertaking:

Table 4.6.- (Table 24.- PAPSM)

**TABLE 24.-
ECONOMIC RESULTS
JANE FURSE HOSPITAL REVITALIZATION PROJECT**
All figures in Present Values (Year 0 values)

	Outflows (Rand)	Patient Days (#)	Cost Per Patient Day (Rand)	QALY'S (Life years)	Cost Per QALY (Rand)
	1	2	3	4	5
A. REVITALIZED HOSPITAL ("With Project")	454,858,248	631,537	720	420,407	1,082
B. CURRENT SITUATION ("Without Project")	282,124,698	374,346	754	213,058	1,324
C. INCREMENTAL ANALYSIS (C = A - B)	172,733,550	257,191	-33	207,349	-242

In its financial analysis the Jane Furse Hospital revitalization shows higher resource costs (outflows) for the case "with project" than "without" the project. The present value of

¹⁹ The absolute values of the numbers of Quality Adjusted Life Years in these cases should be used with great caution because of the crude medical assumptions used to assess the impact of various treatments on the change in the years of life brought about by the variety of treatments.

economic outflows is 454 million Rand for the current facility (without project) for the duration of the project, while for the case with the project the total economic value of investment costs and expenses amounts to approximately 282 million Rand. The fact that the case "with project" has higher outflows is directly related to the revitalization investment costs and slightly larger operating expenditures.

Although the economic resource costs are larger for the case "with project", the average cost per patient day is lower. Due to more patients being treated during the life of the project, the cost per patient-day for the revitalized facility amounts to 720 Rand per patient day, while for the current facility the State bears a larger cost of 754 Rand per patient-day. We can conclude that by undertaking the project Limpopo Province will save resources of 33 Rand for every patient-day, for the duration of the project's life.

In terms of Quality Adjusted Life Years, the number of life years obtained by the different types of treatment amount to 213,058 for the current facility during the life of the project (years 2004-2026), while the quality adjusted life years obtained by the revitalized facility amount to 420,407. On average the revitalization project will increase the number of quality adjusted life years by 207,349 over the current situation.²⁰

Given that the present value of costs is larger for the current facility and the number of life years during the duration of the project is higher for the revitalized facility, it follows that the cost per life year is lower for the revitalized hospital. While the average economic cost per QALY is 1,324 Rand for the current facility, for the revitalized hospital it amounts to 1,082. We can conclude that by undertaking the Jane Furse Hospital revitalization project the Limpopo Province will save resources equivalent to 242 Rand for every life year gained by the health services provided by the revitalized facility.

²⁰ The absolute values of the numbers of Quality Adjusted Life Years in these cases should be used with great caution because of the crude medical assumptions used to assess the impact of various treatments on the change in the years of life brought about by the variety of treatments.

4.1.3. Other Options: Results for a Non-Incremental Model

Since the Health Sector Strategic Framework established by Limpopo Province Department of Health and Welfare (DoHW) will focus primarily in the Revitalization of existing facilities until year 2010, both of the case studies under analysis deal with incremental projects, where the comparison between the facility without the project and the facility with the revitalization project is necessary. However, an alternative model for a “stand alone” investment project has also been developed. This alternative model is similar in regard to input variables and results to the “incremental” model presented above, yet the outcomes are presented for the capital investment project under analysis alone without the comparison with another existing facility. This option will allow the DoHW to carry forward investment appraisal analysis for new clinics or hospitals and for other investments that are not required to be evaluated on an incremental basis.

4.2. Data Requirements for the PAPSM

In order for the Department of Health to be able to use this appraisal tool with ease, the requirements of information by the PAPSM have been limited to only the essential variables required to calculate the C/E and C/U ratios from the economic and financial points of view. The Table of Parameters of the model does not contain any variable that needs to be inputted for “informational” purposes only, all variables required are necessary to carry out the cost effectiveness/utility analysis.

There are 3 types of variables in the PAPSM: Input variables, Macro-input variables and Dependent variables. The input variables, painted light blue in the PAPSM, consist of specific information for each hospital or clinic revitalization investment to be evaluated:

Table 4.7.-

Input Variables (PAPSM Tables 1,2,3 and 5)

REVITALIZED HOSPITAL ("With Project")

General Information of the Project Name of the Project Construction and Operation Starting Years Operation Profile of the Revitalized Facility Maximum Occupation Capacity
Main Variables for the Project Capacity and Utilization In-patient Number of Usable Beds Average Daily In-Patient Admission Average Length of Stay in Days Annual Increase in Admission Out-patient General OPD clinic headcount Specialist OPD clinic headcount CAS (Casualty) headcount Annual Increase in Admission Out-patient Visit/Patient-day Tariff Fee Schedule Average fee In-patients Average fee Out-patients Administrative Expenses General Expenses Services: Tel, Water, Electricity Labor Costs Skilled/Semiskilled Unskilled Professional & Special Services Medicines, Supplies and Minor Equipment Medicines and Supplies Minor Equipment
Estimated Project Investment Costs Land Buildings Equipment Cost Over-run Factor
Treatment Impact Variables Treatment by Disease Life Years Increased by Treatment Percentage of Discharged Patients

CURRENT SITUATION ("Without Project")

General Information of the Project Name of the Project Construction and Operation Starting Years
Main Variables for the Project Capacity and Utilization In-patient Number of Usable Beds Average Daily In-Patient Admission Average Length of Stay in Days Annual Increase(Decrease) in Admission Out-patient General OPD clinic headcount Specialist OPD clinic headcount CAS (Casualty) headcount Annual Increase(Decrease) in Admission Out-patient Visit/Patient-day Tariff Fee Schedule Average fee In-patients Average fee Out-patients Administrative Expenses General Expenses Services: Tel, Water, Electricity Labor Costs Skilled/Semiskilled Unskilled Professional & Special Services Medicines, Supplies and Minor Equipment Medicines and Supplies Minor Equipment Value of Existing Assets Land Building Equipment
Estimated Project Investment Costs Land Buildings Equipment Cost Over-run Factor
Treatment Impact Variables Treatment by Disease Life Years Increased by Treatment Percentage of Discharged Patients

All values are located in the first two pages of the model in the Table of Parameters which serves as a control panel of the model (the Excel cell value contains an empty light blue cell that turns orange when a number is typed).

The macro-input variables which are general parameters necessary for the calculation of any health project, but that do not vary between projects. These variables would change

from time to time and it is important to maintain them up to date, but they are the same for all projects. Thus they do not need to be re-entered every time an analysis is carried out.

Table 4.8.-

Macro-Input Variables (PAPSM Table 4.)	
<u>Macroeconomic Parameters</u>	
EXCHANGE & INFLATION RATES	
Average Domestic Inflation Rate	
Average Foreign Inflation Rate (US\$)	
Real Exchange Rate (R/US\$)	
Appreciation/Depreciation Factor	
WORKING CAPITAL	
Accounts Receivable (% of revenues)	
Bad Debts (% of accounts receivable)	
Accounts Payable (% of total purchases)	
Cash Balance (% of revenue)	
TAXES	
Import Duty on Equipment	
DISCOUNT RATES	
Economic Opportunity Cost of Capital (Real)	
Financial Cost of Funds (Real)	
REAL GROWTH IN WAGE RATES	
Skilled/Semiskilled Categories	
Unskilled Labor	

It is important to note that there could be a project whose peculiarities require some changes in the macro-input variables. In the PAPSM these cells are painted green and turn orange once a value is typed.

For practical purposes, in the PAPSM all dependent variables, cells painted white, are either calculations or results and no data should be typed, however the possibility of modifying the content of these cells for singular projects is available. In order to evaluate an incremental project all input variables, light blue cells, and macro-input variables, light green cells, should contain a value, every time a value is entered in such cells they will turn orange.

4.2.1. Input Variables

The input variables are located in the first tables of the PAPSM model, namely; Table 1. which contains the General Information of the Project, Table 2. where the Main Variables for the Project are located, Table 3. related to the Estimated Project Investment Costs, and Table 5. where the parameters for the calculation of the Quality Adjusted Life Years (QALY) are located.

General Information of the Project.-

Table 4.9.- (Table 1.- PAPSM)

TABLE 1.-
General Information of the Project

Name of the Project:					
Construction starts on year:	2004	▼			
Operation starts on year:	2005	▼			
The Revitalized Facility (With Project) will operate during construction ? =	Yes ☐ No ☐				
Year	2004	2005	2006	2007	2008
If Yes: Operation Profile of the Revitalized Facility					
Maximum Occupation Capacity					
	Cumulative Percentage				
	Percentage				

In Table 1., besides the name of the project, five important parameters are defined; when construction starts, when the operation starts, if the clinic or hospital will operate during construction and its operation profile for those years, and finally, the forecasted occupation level for the first 12 years of the revitalized facility. The PAPSM will arrange all tables and cash flows to begin on the year the project starts operating, however if the old facility will keep operating during the revitalization (if “yes” is selected), the cash flows will show revenues, costs and QALY’s for the years of construction.

The operation profile for such construction years, including costs and number of patients treated, can be defined in order to show the facing out process of the old facility and the staggered facing in of the revitalized facility. For example, lets assume that certain facility will be revitalized in the next four years, and it is expected that it will have four

equal consecutive steps of implementation until the fourth year when all operations will be carried out by the revitalized facility (with project); than the input variable “Operation Profile of the Revitalized Facility” would be 25%, 50%, 75% and 100% for the first, second, third and fourth year, respectively, determining, for example, that for the first year 75% of the operation costs and number of patients treated will be those of the old facility without the revitalization project, while 25% will correspond to the estimated values for the revitalized facility.

If the facility being revitalized will not operate during construction (if “no” is selected), than all values except investment costs will have a zero value until the project starts operation.

The expected occupation/utilization of the revitalized facility is an input variable for the first 12 years of the project, after this period it is assumed the occupation forecasted for the last year (year 12) will repeat itself for the remaining operating life of the project.

Main Variables for the Project.-

Table 2. contains most of the values(data) required to evaluate the project. There are five main areas: Capacity and Utilization, Tariff Fee Schedule, Administrative Expenses, Labour Costs, Allowances and Bonus, Professional and Special Services, and Medicines, Supplies and Minor Equipment. All this parameters should be introduced for both, the revitalized hospital ("with project") and the "without project" situation. In the case of the without project situation also the estimated Value of Existing Assets should be entered.

Table 4.10.- (Table 2.- PAPSM)

REVITALIZED HOSPITAL ("With Project")						
Capacity and Utilization						
In-patient	Patient Differentiation	H-0	H-1	H-2	H-3	Private
Number of Usable Beds						Beds
Average Daily In-Patient Admission						
Average Length of Stay						Days
Annual Percentage Increase in Admission		(Increment until full capacity is reached)				
Out-patient						
General OPD clinic headcount						Patients
Specialist OPD clinic headcount						Patients
CAS (Casualty) headcount						Patients
		H-0	H-1	H-2	H-3	Private
Distribution						
Annual Increase in Admission						
Out-patient Visit/Patient-day						
CURRENT SITUATION ("Without Project")						
Capacity and Utilization						
In-patient	Patient Differentiation	H-0	H-1	H-2	H-3	Private
Number of Usable Beds						Beds
Average Daily In-Patient Admission						
Average Length of Stay						Days
Annual % Increase(Decrease) in Admission		(Increment until full capacity is reached)				
Out-patient						
General OPD clinic headcount						Patients
Specialist OPD clinic headcount						Patients
CAS (Casualty) headcount						Patients
		H-0	H-1	H-2	H-3	Private
Distribution						
Annual Increase in Admission						
Out-patient Visit/Patient-day						

As mentioned, the model allows the differentiation of patients in regard to some defined criteria. Thus, in the PAPSM the 5 categories of differentiation will be entered only once and the labels will repeat themselves automatically through the model. Table 2. shows an example where the defined “Patient Differentiation” is based on the income level, where

a patient defined as “H0” would receive a completely free treatment and the “private” would pay most of the cost of the treatment.

The data for Number of Usable Beds, Average Daily In-Patient Admission, and Average Length of Stay should also be distinguished for each of the categories. Since for outpatients is more difficult to estimate the number of patient through each category the model provides a distribution coefficient for the calculation.

The Annual Increase in Admission for out-patient parameter is initially linked to the one for in-patients, however the PAPSM is designed to make a distinction, thus a different growth(decrease) can be used for each. If a growth rate that will exceed the physical capacity of the hospital on a specific year is introduced, the model will automatically calculate the increase in the first years until it reaches the full capacity, than it will remain constant (at full capacity) for the remaining of the projects life.

The Out-patient Visit/Patient-day parameter is a macro-input variable, since the relationship between a patient day for an in-patient to an out-patient should be similar for any health project in the Limpopo province. The estimated value, taking into account the local cost relationships, is 6.8 out-patients is equivalent to one patient day²¹. It is important to note that calculations for this parameter for other countries have found similar results²².

Tariff Fee Schedule.-

Table 4.11.- (Table 2.- PAPSM)

Tariff Fee Schedule					
	H0	H1	H2	H3	PRIVATE
Average fee In-patients					Per Day
Average fee Out-patients					Per Day

²¹ The relationship between rates charged to in-patients and out-patients is equivalent.

²² Similar results [7.2] are found by Anderson G. M. et. al., Data Watch 135, Comparison Of Hospital Costs In California, New York, and Canada.

The tariff schedule for in-patient and out-patient is also divided by 5 categories of “Patient Differentiation”, depending on the categories the tariff fees will vary. For example the difference will be very significant if the categories are based precisely on fees played (H0, H1, etc).

Administrative Expenses and Medicines, Supplies and Minor Equipment.-

Table 4.12.- (Table 2.- PAPSM)

Administrative Expenses		
General Expenses		Rand per year
Services: Tel, Water, Electricity		Rand per year
Medicines, Supplies and Minor Equipment		
Medicines and Supplies		Rand per year
Minor Equipment		Rand per year

The PAPSM takes into account 4 large groups of recurrent expenses;

- General Expenses,
- Services: Tel, Water, Electricity,
- Medicines and Supplies
- Minor Equipment.

This broad categories include a significant amount of detailed expenses that could be disaggregated in other “worksheet” of the model. However it should be emphasized that the analysis will not be different when the total sum of each of such expenses is directly inserted in the model.

It is important to comment that the growth rates estimated for the “Annual Increase in Admission” are also used as growth rates in the values of the expenses and costs of the project, to maintain a direct correlation between an increased amount of patients with a respective increase in costs.

Labour Costs, Allowances and Bonus, and Professional and Special Services.-

Table 4.13.- (Table 2.- PAPSM)

Labor Costs (operation of the facility)				
	Number	Wage		Allowances and Bonus
Skilled/Semiskilled Category		Rand/month		Percentage of Basic Wage
Unskilled Category		Rand/month		Percentage of Basic Wage
Professional & Special Services		Rand per year		

The total number of workers, Skilled, Semiskilled and Unskilled required for the operation of both, the revitalized hospital ("with project") and the current situation "without project", should be introduced in the model. The wage levels are considered macro-input variables since most hospitals and clinics should pay an similar wage, however if the project requires a different wage level the PAPSM is designed to take each projects specific values.

Estimated Project Investment Costs.-

Table 4.14.- (Table 3.- PAPSM)

TABLE 3.-
Estimated Project Investment Costs (Rand of Year 0)
REVITALIZED HOSPITAL ("With Project")

Year	2004	2005	2006	2007	2008	2009	2010	2011
Land	-	-	-	-	-	-	-	-
Decommissioning of the Old Facility	-	-	-	-	-	-	-	-
Buildings								
Capital Investment 1								
Capital Investment 2								
Capital Investment 3								
Capital Investment 4								
Equipment								
Equipment 1								
Equipment 2								
Equipment 3								
Equipment 4								
TOTAL	-	-	-	-	-	-	-	-
Cost Over-run Factor	0% Percentage							

Table 3. contains the capital investment parameters, the model permits the entry of 4 major infrastructure items (buildings) and 4 major categories of equipment, for each of the first 8 years of the project. If applicable, the model also permits to include the estimation of costs of the Land to be used (for cases of revitalization projects carried out in a different location as the current facility) and potential costs related to the decommissioning or tearing down and cleaning up costs of the old buildings. It is

assumed that there would be no major investments after the programmed construction period. All recurrent minor investments are allocated in Table 2, as mentioned above. For the purpose of calculating the residual value of the capital assets at the end of the project valuation period, for every major category of the capital goods, the estimated economic life needs to be entered.

There is also the possibility of including an estimation of a Cost Overrun Factor. In general this variable is very useful for conducting the risk analysis of the project (either sensitivity, scenarios or Monte Carlo analysis), since it allows to test; what would happen to the estimated results if the construction and equipment were to cost more (or less) than the figure estimated in the base case. Consequently, it is expected that for this variable the base case would contain a zero value (for practical purposes the cell will remain painted light blue until a value other than zero is entered).

Treatment Impact Variables and Quality Adjusted Life Years (QALY) Parameters.-

Table 4.15.- (Table 5.- PAPSM)

TABLE 5.-
Treatment Impact Variables and Quality Adjusted Life Years (QALY) Parameters

	Type of Treatment "With Project"	Type of Treatment "Without Project"	Expected Years of Life Increased By Treatment "With Project"	Expected Years of Life Increased By Treatment "Without Project"	QALYs
Infectious and Parasitic Diseases					0.86
Endocrine, Nutritional and Metabolic Diseases					0.83
Diseases of the Blood and Blood-Forming Organs					0.98
Diseases of the Nervous System and Sense Organs					0.84
Diseases of the Circulatory and Respiratory System					0.89
Diseases of the Digestive System					0.89
Diseases of the Genitourinary System					0.86
Diseases of the Skin and Subcutaneous Tissue					0.92
Diseases of the Musculoskeletal System and Connective Tissue					0.89
Injury and Poisoning					0.87
Maternity					0.99
Total	0%	0%			
Percentage of Discharged Patients					

The QALY parameters have been already calculated in the PAPSM through the preference scores revealed by the population. The complete preference scores list, including how were the preferences determined and the measurement technique can be found in the International Catalog of Diseases²³. However the PAPSM in its Worksheet labeled "Preference Scores" contains a summarized list with the average preference score

²³ Murray CJ, Lopez AD (1996). The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020.

for 70 different health states. The QALY calculation used here were calculated in a manner which resolves some of the limitations of other methods employed elsewhere.²⁴

The input data that needs to be introduced for every investment valuation is the treatment structure being provided by the facility under analysis. Namely, the analyst will have to determine the average percentage of patients treated for each of the 11 categories of treatment differentiated in the PAPSM. Naturally the total should add up to a 100%, meaning that every patient should fall in one of the 11 summarized categories provided. For practical purposes a legend in red color stating “*The total must add up to 100% !*” will appear until the chart is completed.

Under the assumption that the life of every patient discharged will be improved for the remaining of her/his healthy life span, the Years Of Life Increased By Treatment variables represent the average expected impact of each category of treatment on the life expectancy of patients discharged. This parameter is considered an Input variable, since the average impact of treatment can be introduced for every new investment or revitalization project, however it should be noted that the average years of life increased by each treatment should be similar for every hospital or clinic in the Province, thus it could be also considered an Macro-input variable.

The Treatment Impact Variables Table includes an important macro-input variable, the Percentage of Discharged Patients, this variable deals with the fact that not every patient will have the fortune of being discharged, some will have no possibility of improvement in their health due to treatment or will perish, thus such patients will not be included in the calculation of the utility being provided by treatment. These variable should be similar from one hospital or clinic to the other in the Province, thus, if updated regularly, it can be used for the appraisal of all health projects.

²⁴ For a detailed explanation see: Prieto I, Sacristan J., (2003) p. 2, *Problems and solutions in calculating QALYs*

4.2.2. Macro-Input Variables

The macro-input variables are located in the table of parameters in Table 4, and in the economic cash flows. These variables are general macroeconomic parameters necessary for the calculation of any health project, but generally they do not vary between projects. These variables should be updated from time to time, but will be similar for all projects, thus they do not need to be entered every time an investment appraisal is conducted in the model.

Table 4.16.- (Table 4.- PAPSM)

TABLE 4.-
Macroeconomic Parameters

EXCHANGE & INFLATION RATES			TAXES		
Average Domestic Inflation Rate		Projected Annual Rate	Import Duty on Equipment		
Average Foreign Inflation Rate (US\$)		Projected Annual Rate			
Real Exchange Rate (R/US\$)			DISCOUNT RATES		
Appreciation/Depreciation Factor		Annual Rate	Economic Opportunity Cost of Capital (Real)		Annual
			Financial Opportunity Cost of Capital (Real)		Annual
WORKING CAPITAL			REAL GROWTH IN WAGES		
Accounts Receivable		of revenue	Skilled/Semiskilled Categories		Percentage per year
Bad Debts		of accounts receivable	Unskilled Labor		Percentage per year
Accounts Payable		of total purchases			
Cash Balance		of revenue			

The table includes annual inflation rates, tax rates, the real growth in wages, financial and economic opportunity costs of capital outlays for the Republic of South Africa (discount rates), and working capital figures. Most hospitals and clinics would have a very similar amount of accounts payable and receivables, similar cash requirements and also similar percentage of patients that end up not paying their debt; however the PAPSM allows to introduce such changes for specific cases if necessary.

The other macro-input variables are the economic conversion factors to transform financial costs into economic costs, they are located in the second column of the Economic Cash Flow for the revitalized hospital ("with project"), the current situation "without project" and for the incremental project. The purpose of these variables is to convert financial values into economic values, this step is crucial in order to work with real resource costs for the South African economy. The theory behind the economic

analysis calculations is explained in detail in the comprehensive appraisal manual developed by Cambridge Resources International (CRI) for the Limpopo Provincial Government.

For practical purposes a computer based software package was developed to provide easy access to these economic conversion factors.²⁵ The program is called South African Conversion Factors Easy Access (SACFEA), and it can be used by analysts involved in the economic and social appraisal of investments to search for the commodity specific conversion factors for most of South Africa's goods and services. SACFEA is a user-friendly program that guides the user to the desired Commodity Specific Conversion Factor through a few steps.²⁶

These conversion factors are used in the PAPSM as macro-input variables since it is expected that very similar types of investments for most revitalization projects will take place. However it should be noted that the analyst is required to revise each of the investment cost and their structure in order to be able to use the correct conversion factor for every item of the cash flow.

4.2.3. Input Variables for the Non-Incremental PAPSM

The PAPSM for non incremental projects has similar input variables as the described above; the main difference is that the inputs for the “without project” situation are not necessary. Since such model forecasts the operating costs and patients treated for a facility alone, without comparing the results of the revitalized facility with an existing facility (without project), the data input requirements are limited to those of the projected capital investment.

²⁵The computer based system of conversion factors was developed by Cambridge Resources International Inc, Cambridge, Massachusetts, USA.

²⁶ For a detailed step-by-step instruction, the analyst should refer to the SACFEA's version 2.4 manual.

There are three new variables that need to be introduced in the case of the stand alone facility. They arise because without this facility some of the patients would have travelled to other places for treatment. First we need to specify the proportion of the total patients that will be using the new facility who would have otherwise have received treatment elsewhere (Percentage of Patients Otherwise Treated Elsewhere). Second, for these patients there will be savings in transportation costs if they are to voluntarily move from where they would have obtained treatment to the new facility. This variable means that the incremental transportation cost savings reduces the economic cost of building and operating the new facility (Travel Cost Savings for Patients). The third variable is the average operating costs saved per day of the alternative health facility when a patient moves from that place to our new facility. This variable (Operating Costs Savings By Other Facilities) applies only to those patients of the new facility that would have obtained the service elsewhere. See Annex II. Hence, the input data tables differ to the incremental model described above on the following:

Table 1: General Information of the Project, remains identical to the incremental PAPSM, however it should be noted that the Operation Profile of the Revitalized Facility takes into account the costs and number of patients of both the current facility without the project and the revitalized facility with the project, while for the non incremental model only takes into account a portion of such operating costs and number of patients until the project is in full operation.

Table 2: Main Variables of the Project, remains the same for all the variables of the capital investment project (naturally there are no input variables for the without project situation).

Table 3: Estimated Project Investment Costs remains equal except for the estimated potential costs related to the decommissioning or tearing down of the old facility's buildings.

Table 4: Macroeconomic Parameters, remains identical in all its macro-input variables.

Table 5: Treatment Impact Variables and Quality Adjusted Life Years (QALY) Parameters, remains equal except for the variables Type of Treatment Without Project and Expected Years of Life Increased By Treatment Without Project, which are not longer required, and introduces the three new variables described above (Percentage of Patients Otherwise Treated Elsewhere, Travel Cost Savings for Patients and Operating Costs Savings By Other Facilities).

Chapter 5. Conclusion

The main objective of this document is to help public officials in the Department of Health and Welfare to appraise and prioritize investment projects and health policy interventions that maximize economic and social well-being in South Africa.

The methodology proposed amalgamates entirely with other Local and National efforts towards improving the quality of expenditures and capital investments, focusing on the optimization of public expenditures in the health sector.

The project appraisal framework proposed includes a Financial Analysis and an Economic Analysis of investment decisions that employs a health impact indicator, the QALY (Quality Adjusted Life Years), as a measure to evaluate the economic cost of achieving improvements in the overall health of the Province's residents.

This index can be used both to compare with alternative investments in the hospital sector as well as to make comparison with the effectiveness of expenditures on other health care interventions.

In order to simplify the valuation process to determine which investments or health policy interventions are the most beneficial and therefore should be undertaken, a Project Appraisal Parameterized Spreadsheet Model (PAPSM) for the Health Sector has been developed, capable of calculating project's outcomes and investments decision criteria with the input of a reasonable amount of data.

The results provided by the PAPSM are: Annual net financial outflows, present value of inflows and outflows, annual budgetary requirements, patient days, funding required per patient-day, cost per patient-day and QALYs produced. These results can be used to assist decision makers of the Province and its Department of Health in prioritizing the potential revitalization and hospital expansion projects.

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ANNEX I

Project Appraisal Parameterized Spreadsheet Model (PAPSM)

Input Variables:

PAPSM For Incremental Projects

PROJECT APPRAISAL PARAMETERIZED SPREADSHEET MODEL FOR INCREMENTAL PROJECTS

TABLE OF PARAMETERS

TABLE 1.-

General Information of the Project

Name of the Project:										
Construction starts on year:										
Operation starts on year:										
The Revitalized Facility (With Project) will operate during construction ? =										
If Yes: Operation Profile of the Revitalized Facility	2004	2005	2006	2007	2008	2009	2010	2011	2012	Year
Maximum Occupation Capacity										Cumulative Percentage
										Percentage

TABLE 2.-

Main Variables for the Project

LEBOWAKGOMO: REVITALIZED HOSPITAL ("With Project")									
Capacity and Utilization									
In-patient	Patient Differentiation								TOTAL
Number of Usable Beds									
Average Daily In-Patient Admission									
Average Length of Stay in Days									
Annual Percentage Increase in Admission		(Increment until full capacity is reached)							
Out-patient									
General OPD clinic headcount									
Specialist OPD clinic headcount									
CAS (Casualty) headcount									
Distribution		H-0	H-1	H-2	H-3	Private			
Annual Percentage Increase in Admission									
Out-patient Visit/Patient-day									
Tariff Fee Schedule									
Average fee In-patients		H-0	H-1	H-2	H-3	Private			Per Day
Average fee Out-patients									Per Day
Administrative Expenses									
General Expenses									Rand per year
Services: Tel, Water, Electricity									Rand per year
Labor Costs (operation of the facility)									
Skilled/Semiskilled Category		Number	Wage		Allowances and Bonus				
Unskilled Category									
Professional & Special Services									
Medicines, Supplies and Minor Equipment									
Medicines and Supplies									Rand per year
Minor Equipment									Rand per year

GROOTHOEK: CURRENT SITUATION ("Without Project")									
Capacity and Utilization									
In-patient		H-0	H-1	H-2	H-3	Private			TOTAL
Number of Usable Beds									
Average Daily In-Patient Admission									
Average Length of Stay									
Annual % Increase(Decrease) in Admission		(Increment until full capacity is reached)							
Out-patient									
General OPD clinic headcount									
Specialist OPD clinic headcount									
CAS (Casualty) headcount									
Distribution		H-0	H-1	H-2	H-3	Private			
Annual % Increase(Decrease) in Admission									
Out-patient Visit/Patient-day									
Tariff Fee Schedule									
Average fee In-patients		H-0	H-1	H-2	H-3	Private			Per Day
Average fee Out-patients									Per Day
Administrative Expenses									
General Expenses									Rand per year
Services: Tel, Water, Electricity									Rand per year
Labor Costs									
Skilled/Semiskilled Category		Number	Wage		Allowances and Bonus				
Unskilled Category									
Professional & Special Services									
Medicines, Supplies and Minor Equipment									
Medicines and Supplies									Rand per year
Minor Equipment									Rand per year
Value of Existing Assets									
Land		Est. Value		Estimated Remaining Life					
Building									
Equipment									

TABLE 3.-

Estimated Project Investment Costs (Rand of Year 0)
REVITALIZED HOSPITAL ("With Project")

Year	2004	2005	2006	2007	2008	2009	2010	2011	Estimated Life (Economic Depreciation)	Estimated Liquidation Value
Land	-	-	-	-	-	-	-	-	-	-
Decommissioning of the Old Facility	-	-	-	-	-	-	-	-	-	-
Buildings										
Equipment										

[illegible]

TABLE 4.-
Macroeconomic Parameters

EXCHANGE & INFLATION RATES				TAXES			
Average Domestic Inflation Rate		Projected Annual Rate		Import Duty on Equipment			
Average Foreign Inflation Rate (US\$)		Projected Annual Rate					
Real Exchange Rate (R/US\$)				DISCOUNT RATES			
Appreciation/Depreciation Factor		Annual Rate		Economic Opportunity Cost of Capital (Real)		Annual	
				Financial Opportunity Cost of Capital (Real)		Annual	
WORKING CAPITAL				REAL GROWTH IN WAGES			
Accounts Receivable		of revenue		Skilled/Semiskilled Categories		Percentage per year	
Bad Debts		of accounts receivable		Unskilled Labor		Percentage per year	
Accounts Payable		of total purchases					
Cash Balance		of revenue					

TABLE 5.-
Treatment Impact Variables and Quality Adjusted Life Years (QALY) Parameters

	Type of Treatment "With Project"	Type of Treatment "Without Project"	Expected Years of Life Increased By Treatment "With Project"	Expected Years of Life Increased By Treatment "Without Project"	QALYs
Infectious and Parasitic Diseases					0.86
Endocrine, Nutritional and Metabolic Diseases					0.83
Diseases of the Blood and Blood-Forming Organs					0.98
Diseases of the Nervous System and Sense Organs					0.84
Diseases of the Circulatory and Respiratory System					0.89
Diseases of the Digestive System					0.89
Diseases of the Genitourinary System					0.86
Diseases of the Skin and Subcutaneous Tissue					0.92
Diseases of the Musculoskeletal System and Connective Tissue					0.89
Injury and Poisoning					0.87
Maternity					0.99
Total					
Percentage of Discharged Patients					

ANNEX II

Project Appraisal Parameterized Spreadsheet Model (PAPSM)

Input Variables:

PAPSM For Stand Alone Projects

PROJECT APPRAISAL PARAMETERIZED SPREADSHEET MODEL FOR STAND ALONE PROJECTS

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TABLE OF PARAMETERS

TABLE 1:-

General Information of the Project

Name of the Project:									
Construction starts on year:									
Operation starts on year:									
The Revitalized Facility ("With Project") will operate during construction ? =									
Year	2004	2005	2006	2007	2008	2009	2010	2011	
If Yes: Operation Profile of the Facility									Cumulative Percentage
Maximum Occupation Capacity									Percentage

TABLE 2:-

Main Variables for the Project

Capacity and Utilization									
In-patient	Patient Differentiation								TOTAL
Number of Usable Beds									
Average Daily In-Patient Admission									
Average Length of Stay in Days									
Annual Percentage Increase in Admission		(Increment until full capacity is reached)							
Out-patient									
General OPD clinic headcount									Patients
Specialist OPD clinic headcount									Patients
CAS (Casualty) headcount									Patients
Distribution									
Annual Percentage Increase in Admission									
Out-patient Visit/Patient-day									
Tariff Fee Schedule									
Average fee In-patients	0	0	0	0	0				Per Day
Average fee Out-patients									Per Day
Administrative Expenses									
General Expenses									Rand per year
Services: Tel, Water, Electricity									Rand per year
Labor Costs									
Skilled/Semiskilled Category	Number	Wage				Allowances and Bonus			
Unskilled Category			Rand/month				Percentage of Basic Wage		
Professional & Special Services			Rand/month				Percentage of Basic Wage		
Medicines, Supplies and Minor Equipment									
Medicines and Supplies									Rand per year
Minor Equipment									Rand per year

TABLE 3.-
Estimated Project Investment Costs (Rand of Year 0)
REVITALIZED HOSPITAL ("With Project")

Year	2004	2005	2006	2007	2008	2009	2010	2011	Estimated Life (Economic Depreciation)	Estimated Liquidation Value
Land	-	-	-	-	-	-	-	-	-----	-----
Buildings										
TOTAL	-	-	-	-	-	-	-	-		
Cost Over-run Factor		Percentage								

TABLE 4.-
Macroeconomic Parameters

EXCHANGE & INFLATION RATES		TAXES	
Average Domestic Inflation Rate	Projected Annual Rate	Import Duty on Equipment	
Average Foreign Inflation Rate (US\$)	Projected Annual Rate		
Real Exchange Rate (R/US\$)		DISCOUNT RATES	
Appreciation/Depreciation Factor	Annual Rate	Economic Opportunity Cost of Capital (Real)	Annual
		Financial Opportunity Cost of Capital (Real)	Annual
WORKING CAPITAL		REAL GROWTH IN WAGES	
Accounts Receivable	of revenue	Skilled/Semiskilled Categories	Percentage per year
Bad Debts	of accounts receivable	Unskilled Labor	Percentage per year
Accounts Payable	of total purchases		
Cash Balance	of revenue		

TABLE 5.-
Treatment Impact Variables, Quality Adjusted Life Years (QALY) and Cost Savings Parameters

	Type of Treatment "With Project"	Expected Years of Life Increased By Treatment	QALYs
Infectious and Parasitic Diseases			0.86
Endocrine, Nutritional and Metabolic Diseases			0.83
Diseases of the Blood and Blood-Forming Organs			0.98
Diseases of the Nervous System and Sense Organs			0.84
Diseases of the Circulatory and Respiratory System			0.89
Diseases of the Digestive System			0.89
Diseases of the Genitourinary System			0.86
Diseases of the Skin and Subcutaneous Tissue			0.92
Diseases of the Musculoskeletal System and Connective Tissue			0.89
Injury and Poisoning			0.87
Maternity			0.99
Total			
Percentage of Discharged Patients			
Percentage of Patients Otherwise Treated Elsewhere	Percentage		
Travel Cost Savings for Patients	Rand Per Patient		
Operating Costs Savings By Other Facilities	Rand Per Patient-day		

ANNEX III

Project Appraisal Parameterized Spreadsheet Model (PAPSM)

Case Study One:

The Revitalization Project of the Lebowakgomo Hospital

PROJECT APPRAISAL PARAMETERIZED SPREADSHEET MODEL FOR INCREMENTAL PROJECTS
LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT

TABLE OF PARAMETERS

TABLE 1.-
General Information of the Project

Name of the Project:	LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT									
Construction starts on year:	2004									
Operation starts on year:	2005									
The Revitalized Facility (With Project) will operate during construction ? =	Yes									
If Yes: Operation Profile of the Revitalized Facility	2004	2005	2006	2007	2008	2009	2010	2011	2012	Year
	50%	100%	100%	100%	100%	100%	100%	100%		Cumulative Percentage
Maximum Occupation Capacity	70.0%	75.0%	80.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	Percentage

TABLE 2.-
Main Variables for the Project

LEBOWAKGOMO: REVITALIZED HOSPITAL ("With Project")

Capacity and Utilization

In-patient

Patient Differentiation

	H-0	H-1	H-2	H-3	Private	TOTAL
Number of Usable Beds	80	80	50	30	12	252
Average Daily In-Patient Admission	18	15	3	2	2	
Average Length of Stay in Days	5.2	5.2	5.2	5.2	5.2	
Annual Percentage Increase in Admission	2.0% (Increment until full capacity is reached)					

Out-patient

General OPD clinic headcount	42,285	Patients			
Specialist OPD clinic headcount	3,932	Patients			
CAS (Casualty) headcount	20,377	Patients			
Distribution	H-0 46.3%	H-1 48.8%	H-2 1.7%	H-3 1.1%	Private 2.2%
Annual Percentage Increase in Admission	2.0%				
Out-patient Visit/Patient-day	6.8				

Tariff Fee Schedule

	H-0	H-1	H-2	H-3	Private	
Average fee In-patients	0	10	287	694	694	Per Day
Average fee Out-patients	0	20	86	173	173	Per Day

Administrative Expenses

General Expenses	1,285,000	Rand per year
Services: Tel, Water, Electricity	1,122,000	Rand per year

Labor Costs (operation of the facility)

	Number	Wage	Allowances and Bonus
Skilled/Semisilled Category	400	6,437	25% Percentage of Basic Wage
Unskilled Category	170	1,453	15% Percentage of Basic Wage
Professional & Special Services	2,499,000 Rand per year		

Medicines, Supplies and Minor Equipment

Medicines and Supplies	4,707,000	Rand per year
Minor Equipment	1,392,000	Rand per year

GROOTHOEK: CURRENT SITUATION ("Without Project")

Capacity and Utilization

In-patient

	H-0	H-1	H-2	H-3	Private	TOTAL
Number of Usable Beds	280	150	30	20	10	490
Average Daily In-Patient Admission	23	11	2	1	1	
Average Length of Stay	5.2	5.2	5.2	5.2	5.2	

Annual % Increase(Decrease) in Admission -2.0% (Increment until full capacity is reached)

Out-patient

General OPD clinic headcount	42,937	Patients
Specialist OPD clinic headcount	3,992	Patients
CAS (Casualty) headcount	20,650	Patients

Distribution

H-0	H-1	H-2	H-3	Private
63.5%	31.9%	1.8%	1.0%	1.8%

Annual % Increase(Decrease) in Admission -2.0%

Out-patient Visit/Patient-day 6.8

Tariff Fee Schedule

	H-0	H-1	H-2	H-3	Private	
Average fee In-patients	0	10	287	694	694	Per Day
Average fee Out-patients	0	20	86	173	173	Per Day

Administrative Expenses

General Expenses	1,432,000	Rand per year
Services: Tel, Water, Electricity	1,327,000	Rand per year

Labor Costs

	Number	Wage	Allowances and Bonus
Skilled/Semisilled Category	745	6,437	25% Percentage of Wage
Unskilled Category	520	1,453	15% Percentage of Wage

Professional & Special Services 3,609,000 Rand per year

Medicines, Supplies and Minor Equipment

Medicines and Supplies	4,970,000	Rand per year
Minor Equipment	1,795,000	Rand per year

Value of Existing Assets

	Est. Value	Estimated Remaining Life
Land	5,940,000 Rand	
Building	10,000,000 Rand	15
Equipment	1,000,000 Rand	5

TABLE 3.-
Estimated Project Investment Costs (Rand of Year 0)
REVITALIZED HOSPITAL ("With Project")

Year	2004	2005	2006	2007	2008	2009	2010	2011	Estimated Life (Economic Depreciation)	Estimated Liquidation Value
Land										
Decommissioning of the Old Facility										
Buildings										
Civil Works	8,251,000	1,439,000	813,000	270,000	256,000				40	4,687,325
Physical Infrastructure	57,071,000	17,871,000	8,842,000	2,948,000	2,784,000				40	38,044,300
Electrical Infrastructure	3,437,000	1,016,000	508,000	169,000	160,000				40	2,248,250
Aircon and Medical Gas Plant	1,132,000								40	481,100
Equipment										
Standby Generator	157,000								20	-
Boilers, Autoclaves, Laundry Equipment	780,000	2,754,000			4,800,000				20	-
X-Ray, Operating tables, Dental Chairs	3,779,000								20	-
Other Equipments	9,152,000	1,746,000	2,250,000	550,000		800,000			20	-
TOTAL	83,759,000	24,826,000	12,413,000	3,937,000	8,000,000	800,000	-	-		

Cost Over-run Factor0%Percentage

TABLE 4.-
Macroeconomic Parameters

EXCHANGE & INFLATION RATES			TAXES		
Average Domestic Inflation Rate	5.0%	Projected Annual Rate	Import Duty on Equipment	15.0%	
Average Foreign Inflation Rate (US\$)	2.5%	Projected Annual Rate			
Real Exchange Rate (R/US\$)	7.00		DISCOUNT RATES		
Appreciation/Depreciation Factor	0.0%	Annual Rate	Economic Opportunity Cost of Capital (Real)	11.4%	Annual
			Financial Opportunity Cost of Capital (Real)	11.4%	Annual
WORKING CAPITAL			REAL GROWTH IN WAGES		
Accounts Receivable	15.0%	of revenue	Skilled/Semiskilled Categories	1.0%	Percentage per year
Bad Debts	40.0%	of accounts receivable	Unskilled Labor	0.5%	Percentage per year
Accounts Payable	15.0%	of total purchases			
Cash Balance	10.0%	of revenue			

TABLE 5.-
Treatment Impact Variables and Quality Adjusted Life Years (QALY) Parameters

	Type of Treatment "With Project"	Type of Treatment "Without Project"	Expected Years of Life Increased By Treatment "With Project"	Expected Years of Life Increased By Treatment "Without Project"	QALYs
Infectious and Parasitic Diseases	14%	14%	5.75	5.75	0.86
Endocrine, Nutritional and Metabolic Diseases	9%	9%	1.58	1.58	0.83
Diseases of the Blood and Blood-Forming Organs	11%	11%	1.31	1.31	0.98
Diseases of the Nervous System and Sense Organs	6%	6%	3.28	3.28	0.84
Diseases of the Circulatory and Respiratory System	6%	6%	1.46	1.46	0.89
Diseases of the Digestive System	10%	10%	2.9	2.9	0.89
Diseases of the Genitourinary System	9%	9%	3.09	3.09	0.86
Diseases of the Skin and Subcutaneous Tissue	4%	4%	5.85	5.85	0.92
Diseases of the Musculoskeletal System and Connective Tissue	8%	8%	1.09	1.09	0.89
Injury and Poisoning	12%	12%	5.21	5.21	0.87
Maternity	11%	11%	1.04	1.04	0.99
Total	100%	100%			
Percentage of Discharged Patients	92%				

FINANCIAL ANALYSIS

TABLE 6.-
Inflation and Exchange Rates

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
INFLATION RATE																		
Domestic Inflation Rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Domestic Inflation Index	1	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48	1.55	1.63	1.71	2.41	2.53	2.65	2.79	2.93	3.07
Foreign Inflation Rate (US)	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Inflation Index (US)	1.00	1.02	1.05	1.08	1.10	1.13	1.16	1.19	1.21	1.24	1.28	1.31	1.55	1.59	1.63	1.67	1.71	1.75
Relative inflation rate	1.00	1.02	1.05	1.08	1.10	1.13	1.16	1.19	1.22	1.25	1.28	1.31	1.55	1.59	1.63	1.67	1.71	1.76
EXCHANGE RATE																		
Real Exchange Rate	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Appreciation in real exchange rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate	7.00	7.17	7.35	7.53	7.72	7.91	8.11	8.31	8.51	8.73	8.94	9.16	10.88	11.15	11.42	11.71	12.00	12.29

TABLE 7.-
Number of Patient Days

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																		
Number of Usable Beds																		
H-0	180	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0
H-1	115	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0
H-2	40	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	0
H-3	25	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	0
Private	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0
Total Usable Beds per Year	135,415	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	0
In-patient days																		
H-0	27,236	21,900	23,360	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	0
H-1	17,272	21,780	23,360	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	24,820	0
H-2	3,322	4,356	4,739	5,136	5,239	5,344	5,451	5,560	5,671	5,784	5,900	6,018	6,913	7,051	7,192	7,336	7,482	0
H-3	1,993	2,904	3,159	3,424	3,493	3,562	3,634	3,706	3,780	3,856	3,933	4,012	4,608	4,701	4,795	4,890	4,988	0
Private	1,993	2,904	3,159	3,424	3,493	3,562	3,634	3,706	3,723	3,723	3,723	3,723	3,723	3,723	3,723	3,723	3,723	0
Total In-patient Days	51,815	53,843	57,778	61,624	61,864	62,108	62,358	62,612	62,814	63,003	63,196	63,393	64,884	65,114	65,349	65,589	65,834	0
Capacity Occupation	38%	59%	63%	67%	67%	68%	68%	68%	68%	68%	69%	69%	71%	71%	71%	71%	72%	
Out-patient visits																		
General OPD	36,170	43,131	43,993	44,873	45,771	46,686	47,620	48,572	49,544	50,534	51,545	52,576	60,393	61,601	62,833	64,090	65,372	0
Specialist OPD	3,363	4,011	4,091	4,173	4,256	4,341	4,428	4,517	4,607	4,699	4,793	4,889	5,616	5,728	5,843	5,960	6,079	0
CAS (Casualty)	17,416	20,785	21,200	21,624	22,057	22,498	22,948	23,407	23,875	24,352	24,839	25,336	29,103	29,685	30,279	30,885	31,502	0
Total Out-patients	56,950	67,926	69,284	70,670	72,083	73,525	74,996	76,496	78,025	79,586	81,178	82,801	95,113	97,015	98,955	100,934	102,953	0
Out-patient equivalent days																		

H-0	3,873	4,820	4,712	4,807	4,903	5,001	5,101	5,203	5,307	5,413	5,521	5,632 ¹	6,469	6,598	6,730	6,865	7,002	
H-1	4,088	4,876	4,973	5,073	5,174	5,278	5,383	5,491	5,601	5,713	5,827	5,943	6,827	6,964	7,103	7,245	7,390	
H-2	138	165	168	171	175	178	182	186	189	193	197	201	231	235	240	245	250	
H-3	92	110	112	114	117	119	121	124	126	129	131	134	154	157	160	163	167	
Private	183	219	223	228	232	237	242	246	251	256	261	267	306	312	319	325	332	
Total Out-patient Days	8,375	9,989	10,189	10,393	10,601	10,813	11,029	11,249	11,474	11,704	11,938	12,177	13,987	14,267	14,552	14,843	15,140	0
TOTAL PATIENT DAYS	60,190	63,832	67,967	72,017	72,465	72,921	73,387	73,862	74,289	74,707	75,134	75,569	78,871	79,381	79,902	80,432	80,974	0
CURRENT SITUATION ("Without Project")																		
Number of Usable Beds																		
H-0	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	0
H-1	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	0
H-2	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	0
H-3	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
Private	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0
Total Usable Beds per Year	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	178,850	0
In-patient days																		
H-0	30,558	32,086	33,540	34,924	34,225	33,541	32,870	32,213	31,568	30,937	30,318	29,712	25,794	25,278	24,772	24,277	23,791	0
H-1	14,615	15,345	16,041	16,703	16,369	16,041	15,720	15,406	15,098	14,796	14,500	14,210	12,336	12,089	11,848	11,611	11,378	0
H-2	2,657	2,790	2,917	3,037	2,858	2,917	2,858	2,801	2,745	2,690	2,636	2,584	2,243	2,198	2,154	2,111	2,069	0
H-3	1,329	1,395	1,458	1,518	1,488	1,458	1,429	1,401	1,373	1,345	1,318	1,292	1,121	1,099	1,077	1,056	1,034	0
Private	1,329	1,395	1,458	1,518	1,488	1,458	1,429	1,401	1,373	1,345	1,318	1,292	1,121	1,099	1,077	1,056	1,034	0
Total In-patient Days	50,487	53,011	55,414	57,700	56,546	55,415	54,307	53,221	52,156	51,113	50,091	49,089	42,616	41,763	40,928	40,109	39,307	0
Capacity Occupation	28%	30%	31%	32%	32%	31%	30%	30%	29%	29%	28%	27%	24%	23%	23%	22%	22%	
Out-patient visits																		
General OPD	30,056	31,559	32,989	34,350	33,663	32,990	32,330	31,684	31,050	30,429	29,820	29,224	25,370	24,863	24,365	23,878	23,400	0
Specialist OPD	2,794	2,934	3,067	3,194	3,130	3,067	3,006	2,946	2,887	2,829	2,772	2,717	2,359	2,312	2,265	2,220	2,176	0
CAS (Casualty)	14,455	15,178	15,866	16,520	16,190	15,866	15,549	15,238	14,933	14,634	14,342	14,050	12,201	11,957	11,718	11,484	11,254	0
Total Out-patient visits	47,305	49,671	51,922	54,064	52,983	51,923	50,885	49,867	48,870	47,892	46,934	45,996	39,930	39,131	38,349	37,582	36,830	0
Out-patient equivalent days																		
H-0	4,415	4,635	4,846	5,045	4,945	4,846	4,749	4,654	4,561	4,469	4,380	4,292	3,726	3,652	3,579	3,507	3,437	
H-1	2,217	2,328	2,433	2,534	2,483	2,433	2,385	2,337	2,290	2,245	2,200	2,156	1,871	1,834	1,797	1,761	1,726	
H-2	127	133	139	145	142	139	136	133	131	128	126	123	107	105	103	101	99	
H-3	70	70	76	78	78	76	75	73	72	70	69	66	58	56	54	52	50	
Private	128	134	140	146	143	140	138	135	132	130	127	124	108	106	104	102	100	
Total Out-patient Days	6,957	7,304	7,636	7,951	7,792	7,636	7,483	7,333	7,187	7,043	6,902	6,764	5,872	5,755	5,640	5,527	5,416	0
TOTAL PATIENT DAYS	57,443	60,316	63,050	65,651	64,338	63,051	61,790	60,554	59,343	58,156	56,993	55,853	48,488	47,518	46,568	45,636	44,723	0
INCREMENTAL PATIENT DAYS	2,747	3,517	4,917	6,366	8,127	9,870	11,597	13,307	14,945	16,551	18,141	19,716	30,383	31,863	33,334	34,796	36,250	0

TABLE 8 - Tariffs and Rates																		
Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 ¹	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																		
Tariff per Patient																		
In-patients																		
H-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H-1	10	11	11	12	12	13	13	14	15	16	16	17	24	25	27	28	29	
H-2	287	301	316	332	349	366	385	404	424	445	467	491	691	725	761	800	840	
H-3	694	729	765	803	844	886	930	977	1,025	1,077	1,130	1,187	1,670	1,754	1,841	1,933	2,030	
Private	694	729	765	803	844	886	930	977	1,025	1,077	1,130	1,187	1,670	1,754	1,841	1,933	2,030	
Out-patients																		
H-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H-1	20	21	22	23	24	26	27	28	30	31	33	34	48	51	53	56	59	
H-2	86	90	94	99	104	109	115	120	126	133	139	146	206	216	227	238	250	
H-3	173	182	191	201	211	221	232	244	256	269	282	297	417	438	460	483	507	
Private	173	182	191	201	211	221	232	244	256	269	282	297	417	438	460	483	507	
CURRENT SITUATION ("Without Project")																		
Tariff per Patient																		
In-patients																		
H-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H-1	10	11	11	12	12	13	13	14	15	16	16	17	24	25	27	28	29	
H-2	287	301	316	332	349	366	385	404	424	445	467	491	691	725	761	800	840	
H-3	694	729	765	803	844	886	930	977	1,025	1,077	1,130	1,187	1,670	1,754	1,841	1,933	2,030	
Private	694	729	765	803	844	886	930	977	1,025	1,077	1,130	1,187	1,670	1,754	1,841	1,933	2,030	
Out-patients																		
H-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H-1	20	21	22	23	24	26	27	28	30	31	33	34	48	51	53	56	59	
H-2	86	90	94	99	104	109	115	120	126	133	139	146	206	216	227	238	250	
H-3	173	182	191	201	211	221	232	244	256	269	282	297	417	438	460	483	507	
Private	173	182	191	201	211	221	232	244	256	269	282	297	417	438	460	483	507	

TABLE 9 - Revenues from Tariffs and Rates																			
	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 ¹	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
In-patient																			
H-0	272	230	258	287	302	317	333	349	367	385	404	425	597	627	659	691	726	0	
H-1	172,718	228,685	257,544	287,323	301,689	316,773	332,612	349,242	366,704	385,040	404,292	424,506	597,323	627,189	658,548	691,476	726,050	0	
H-2	953,271	1,312,653	1,499,575	1,706,423	1,827,579	1,957,337	2,096,308	2,245,146	2,404,551	2,575,274	2,758,119	2,953,945	4,774,590	5,113,500	5,476,558	5,865,394	6,281,837	0	
H-3	1,383,073	2,116,101	2,417,434	2,750,889	2,946,202	3,155,382	3,379,414	3,619,353	3,876,327	4,151,546	4,446,306	4,761,993	7,696,886	8,243,365	8,828,644	9,455,478	10,126,817	0	
Private	1,383,073	2,116,101	2,417,434	2,750,889	2,946,202	3,155,382	3,379,414	3,619,353	3,817,393	4,008,263	4,208,678	4,419,119	6,218,131	6,529,038	6,855,490	7,198,264	7,558,177	0	
Total Revenue In-patient	3,892,406	5,773,771	6,592,245	7,495,810	8,021,973	8,585,191	9,188,081	9,833,443	10,465,342	11,120,508	11,817,797	12,559,979	19,287,447	20,513,719	21,819,899	23,211,303	24,693,607	0	
Out-patient																			
H-0	263	330	353	378	405	434	465	498	533	571	612	655	1,059	1,134	1,214	1,301	1,393	0	
H-1	555,942	696,247	745,681	798,624	855,326	916,054	981,094	1,050,752	1,125,355	1,205,256	1,290,829	1,382,478	2,234,521	2,393,172	2,563,087	2,745,066	2,939,966	0	
H-2	80,342	100,618	107,762	115,413	123,607	132,383	141,782	151,849	162,630	174,177	186,543	199,788	322,921	345,848	370,482	396,702	424,868	0	
H-3	108,626	136,040	145,699	156,043	167,122	178,988	191,696	205,307	219,884	235,495	252,215	270,123	436,604	467,603	500,802	536,359	574,441	0	
Private	216,264	270,843	290,073	310,668	332,726	356,349	381,650	408,747	437,768	468,850	502,138	537,790	869,238	930,954	997,052	1,067,842	1,143,659	0	

Total Revenue Out-patient	961,437	1,204,078	1,289,567	1,381,126	1,479,186	1,584,209	1,696,688	1,817,152	1,946,170	2,084,348	2,232,337	2,390,833	3,864,342	4,138,710	4,432,558	4,747,270	5,084,326	
Total Revenue	4,853,843	6,977,849	7,881,812	8,876,937	9,501,159	10,169,400	10,884,768	11,650,595	12,411,513	13,204,866	14,050,133	14,950,812	23,151,789	24,652,429	26,252,458	27,958,573	29,777,933	0
CURRENT SITUATION ("Without Project")																		
In-patient																		
H-0	306	337	370	404	416	428	440	453	466	480	494	508	621	639	657	676	696	0
H-1	146,146	161,126	176,852	193,354	198,962	204,732	210,669	216,778	223,065	229,534	236,190	243,040	296,882	305,492	314,351	323,468	332,848	0
H-2	762,616	840,785	922,845	1,008,958	1,038,218	1,068,326	1,099,308	1,131,188	1,163,992	1,197,748	1,232,483	1,268,225	1,549,187	1,594,113	1,640,342	1,687,912	1,736,862	0
H-3	922,048	1,016,558	1,115,774	1,219,890	1,255,267	1,291,670	1,329,128	1,367,673	1,407,335	1,448,148	1,490,144	1,533,359	1,873,059	1,927,377	1,983,271	2,040,786	2,099,969	0
Private	922,048	1,016,558	1,115,774	1,219,890	1,255,267	1,291,670	1,329,128	1,367,673	1,407,335	1,448,148	1,490,144	1,533,359	1,873,059	1,927,377	1,983,271	2,040,786	2,099,969	0
Total Revenue In-patient	2,753,165	3,035,364	3,331,616	3,642,497	3,748,130	3,856,825	3,966,673	4,083,765	4,202,194	4,324,058	4,449,455	4,578,489	5,692,807	5,754,998	5,921,893	6,093,628	6,270,344	0
Out-patient																		
H-0	300	331	363	397	409	421	433	445	458	471	485	499	610	628	646	664	684	0
H-1	301,524	332,430	364,875	398,923	410,492	422,396	434,645	447,250	460,220	473,567	487,300	501,432	612,519	630,282	648,560	667,368	686,722	0
H-2	73,612	81,157	89,078	97,390	100,214	103,121	106,111	109,188	112,355	115,613	118,966	122,416	149,536	153,872	158,335	162,926	167,651	0
H-3	82,027	90,435	99,262	108,524	111,671	114,910	118,242	121,671	125,200	128,830	132,566	136,411	166,631	171,464	176,436	181,553	186,818	0
Private	150,930	166,401	182,641	199,684	205,475	211,434	217,565	223,875	230,367	237,048	243,922	250,996	306,602	315,493	324,642	334,057	343,745	0
Total Revenue Out-patient	608,394	670,754	736,220	804,918	828,261	852,280	876,997	902,429	928,600	955,529	983,240	1,011,754	1,235,697	1,271,738	1,308,619	1,346,569	1,385,619	0
Total Revenue	3,361,559	3,706,118	4,067,835	4,447,415	4,576,390	4,709,106	4,845,670	4,986,194	5,130,794	5,279,587	5,432,695	5,590,243	6,828,704	7,026,737	7,230,512	7,440,197	7,655,963	0

TABLE 10.-

Operating Expenses

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																		
Medicines and Supplies	4,838,500	5,041,197	5,399,122	5,782,460	6,193,014	6,632,718	7,103,641	7,608,000	8,148,168	8,726,688	9,346,283	10,009,869	16,179,112	17,327,829	18,558,104	19,875,730	21,286,907	0
Minor Equipment	1,593,500	1,490,832	1,596,681	1,710,045	1,831,459	1,961,492	2,100,758	2,249,912	2,409,656	2,580,741	2,763,974	2,960,216	4,784,645	5,124,355	5,488,184	5,877,845	6,295,172	0
Administrative Expenses	1,358,500	1,376,235	1,473,948	1,578,598	1,690,678	1,810,717	1,939,277	2,076,666	2,224,431	2,382,365	2,551,513	2,732,671	4,416,860	4,730,457	5,066,319	5,426,028	5,811,276	0
Services: Tel, Water, Electricity	1,224,500	1,201,662	1,286,980	1,378,356	1,476,219	1,581,030	1,693,284	1,815,507	1,942,266	2,080,166	2,227,858	2,386,036	3,856,589	4,130,407	4,423,665	4,737,746	5,074,126	0
Total Purchases	9,015,000	9,109,926	9,756,731	10,449,459	11,191,370	11,985,957	12,836,960	13,748,385	14,724,520	15,769,961	16,889,628	18,088,792	29,237,205	31,313,047	33,536,273	35,917,348	38,467,480	0
CURRENT SITUATION ("Without Project")																		
Medicines and Supplies	4,970,000	5,114,130	5,479,425	5,753,396	6,041,066	6,343,119	6,660,275	6,993,289	7,342,954	7,710,101	8,095,606	8,500,387	11,960,898	12,558,942	13,186,890	13,846,234	14,538,546	0
Minor Equipment	1,795,000	1,847,055	1,900,620	1,955,738	2,012,454	2,070,815	2,130,869	2,192,664	2,256,251	2,321,682	2,389,011	2,458,293	3,002,902	3,089,986	3,179,596	3,271,804	3,366,687	0
Administrative Expenses	1,432,000	1,473,528	1,516,260	1,560,232	1,605,479	1,652,037	1,699,947	1,749,245	1,799,973	1,852,172	1,905,885	1,961,156	2,395,630	2,465,103	2,536,591	2,610,153	2,685,847	0
Services: Tel, Water, Electricity	1,327,000	1,365,483	1,405,082	1,445,629	1,487,758	1,530,903	1,575,300	1,620,983	1,667,992	1,716,364	1,766,138	1,817,356	2,219,973	2,284,352	2,350,598	2,418,766	2,488,910	0
Total Purchases	9,524,000	9,800,196	10,301,387	10,715,195	11,146,757	11,596,875	12,066,390	12,556,181	13,067,170	13,600,320	14,156,641	14,737,191	19,579,403	20,398,384	21,253,675	22,146,957	23,079,989	0

TABLE 11.-

Working Capital

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																		
Accounts Receivable	728,077	1,046,677	1,182,272	1,331,540	1,425,174	1,525,410	1,632,715	1,747,589	1,861,727	1,980,728	2,107,520	2,242,622	3,472,768	3,697,864	3,937,869	4,193,786	4,466,690	0
Accounts Receivable Not Paid	291,231	418,671	472,909	532,616	570,070	610,164	653,086	699,036	744,691	792,291	843,008	897,049	1,389,107	1,479,146	1,575,147	1,677,514	1,786,676	0
Change in Accounts Receivable	0	-191,160	-81,357	-89,561	-56,180	-60,142	-64,383	-69,036	-68,483	-71,401	-76,075	-81,061	-126,677	-135,058	-144,003	-153,550	-163,742	2,680,014
Accounts Payable	1,352,250	1,366,489	1,463,510	1,567,419	1,678,706	1,797,894	1,925,544	2,062,258	2,208,678	2,365,494	2,533,444	2,713,319	4,385,581	4,696,957	5,030,441	5,387,602	5,770,122	0
Change in Accounts Payable	0	-14,239	-97,021	-103,909	-111,287	-119,188	-127,650	-136,714	-146,420	-156,816	-167,950	-179,875	-290,734	-311,376	-333,484	-357,161	-382,520	5,770,122
Cash Balance	485,384	697,785	788,181	887,694	950,116	1,016,940	1,088,477	1,165,060	1,241,151	1,320,486	1,405,013	1,495,081	2,315,179	2,465,243	2,625,246	2,795,857	2,977,793	0
Change in Cash Balance	0	212,401	90,396	99,512	62,422	66,824	71,537	76,583	76,092	79,334	84,528	90,068	140,752	150,064	160,003	170,612	181,936	-2,977,793
CURRENT SITUATION ("Without Project")																		
Accounts Receivable	504,234	555,918	610,175	667,112	696,459	706,366	726,850	747,929	769,619	791,938	814,904	838,536	1,024,306	1,054,011	1,084,577	1,116,030	1,148,394	0
Accounts Receivable Not Paid	201,694	222,367	244,070	266,845	274,583	282,546	290,740	299,172	307,848	316,775	325,962	335,415	409,722	421,604	433,831	446,412	459,358	0
Change in Accounts Receivable	0	-31,010	-32,555	-34,162	-11,608	-11,944	-12,291	-12,647	-13,014	-13,391	-13,784	-14,179	-17,321	-17,823	-18,340	-18,872	-19,419	689,037
Accounts Payable	1,428,600	1,470,029	1,545,208	1,607,279	1,672,014	1,739,531	1,809,959	1,883,427	1,960,075	2,040,048	2,123,496	2,210,579	2,936,910	3,059,758	3,188,051	3,322,043	3,461,998	0
Change in Accounts Payable	0	-41,429	-75,179	-62,071	-64,734	-67,518	-70,427	-73,469	-76,648	-79,972	-83,448	-87,083	-117,641	-122,847	-128,294	-133,992	-139,955	3,461,998
Cash Balance	336,156	370,612	406,784	444,742	82,826	85,228	87,700	90,243	92,860	95,553	98,324	101,175	123,590	127,174	130,862	134,657	138,562	0
Change in Cash Balance	0	34,456	36,172	37,958	-361,915	2,402	2,472	2,543	2,617	2,693	2,771	2,851	3,483	3,584	3,688	3,795	3,905	-138,562

TABLE 12.-

Labor Costs

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
Number of Employees	Skilled/Semiskilled	573	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	0
	Unskilled	345	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	0
Salaries																			
Skilled/Semiskilled	Real Salary/month	6,437	6,501	6,566	6,632	6,698	6,765	6,833	6,901	6,970	7,040	7,110	7,182	7,700	7,777	7,854	7,933	8,012	0
	Nominal Salary/month	6,437	6,826	7,239	7,677	8,142	8,634	9,157	9,711	10,298	10,921	11,582	12,283	18,530	19,651	20,840	22,101	23,438	0
Total Salaries per year		44,222,190	32,766,905	34,749,303	36,851,635	39,081,159	41,445,569	43,953,026	46,612,184	49,432,222	52,422,871	55,594,455	58,957,919	88,944,041	94,325,156	100,031,828	106,083,753	112,501,820	0
Unskilled	Real Salary/month	1,453	1,460	1,468	1,475	1,482	1,490	1,497	1,505	1,512	1,520	1,527	1,535	1,589	1,597	1,605	1,613	1,622	0
	Nominal Salary/month	1,453	1,533	1,618	1,707	1,802	1,901	2,006	2,117	2,234	2,358	2,488	2,625	3,825	4,037	4,260	4,495	4,743	0
Total Salaries per year		6,015,420	3,127,888	3,300,703	3,483,067	3,675,507	3,878,579	4,092,870	4,319,001	4,557,626	4,809,435	5,075,156	5,355,558	7,803,551	8,234,697	8,689,664	9,169,768	9,676,398	0
Allowances and Bonus		11,957,861	8,660,909	9,182,431	9,735,369	10,321,616	10,943,179	11,602,187	12,300,896	13,041,699	13,827,133	14,659,887	15,542,814	23,406,543	24,816,494	26,311,407	27,896,404	29,576,915	0
Total Direct Labor Cost		62,195,471	44,555,702	47,232,437	50,070,072	53,078,282	56,267,327	59,648,083	63,232,082	67,031,547	71,059,439	75,329,498	79,856,291	120,154,135	127,376,346	135,032,898	143,149,925	151,755,133	0

Professional & Special Services	3,054,000	2,623,950	2,755,148	2,892,905	3,037,550	3,189,428	3,348,899	3,516,344	3,692,161	3,876,769	4,070,608	4,274,138	6,014,141	6,314,849	6,630,591	6,962,121	7,310,227	0
TOTAL LABOR COSTS	65,249,471	47,179,652	49,987,585	52,962,976	56,115,832	59,456,755	62,996,982	66,748,426	70,723,708	74,936,208	79,400,105	84,130,429	126,168,277	133,691,195	141,663,489	150,112,045	159,065,359	0
CURRENT SITUATION ("Without Project")																		
Number of Employees																		0
Skilled/Semiskilled	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	745	0
Unskilled	520	520	520	520	520	520	520	520	520	520	520	520	520	520	520	520	520	0
Salaries																		
Skilled/Semiskilled																		
Real Salary/month	6,437	6,501	6,566	6,632	6,698	6,765	6,833	6,901	6,970	7,040	7,110	7,182	7,700	7,777	7,854	7,933	8,012	0
Nominal Salary/month	6,437	6,826	7,239	7,677	8,142	8,634	9,157	9,711	10,298	10,921	11,582	12,283	18,530	19,651	20,840	22,101	23,438	0
Total Salaries per year	57,546,780	61,028,360	64,720,576	68,636,171	72,788,659	77,192,373	81,862,512	86,815,194	92,067,513	97,637,597	103,544,672	109,809,125	165,658,277	175,680,602	186,309,270	197,580,390	209,534,640	0
Unskilled																		
Real Salary/month	1,453	1,460	1,468	1,475	1,482	1,490	1,497	1,505	1,512	1,520	1,527	1,535	1,589	1,597	1,605	1,613	1,622	0
Nominal Salary/month	1,453	1,533	1,618	1,707	1,802	1,901	2,006	2,117	2,234	2,358	2,488	2,625	4,234	3,825	4,037	4,265	4,495	0
Total Salaries per year	9,066,720	9,567,656	10,096,289	10,654,088	11,242,727	11,863,887	12,519,367	13,211,062	13,940,973	14,711,212	15,524,006	16,381,708	23,869,686	25,188,486	26,580,150	28,048,703	29,598,394	0
Allowances and Bonus	15,746,703	16,692,238	17,694,584	18,757,156	19,883,574	21,077,676	22,343,533	23,685,458	25,108,024	26,616,081	28,214,769	29,909,537	44,995,022	47,698,423	50,564,342	53,602,553	56,823,419	0
Total Direct Labor Cost	82,360,203	87,288,255	92,511,430	98,047,415	103,914,959	110,133,937	116,725,412	123,711,713	131,116,510	138,964,890	147,283,447	156,100,370	234,522,984	248,567,512	263,455,771	279,232,246	295,956,453	0
Professional & Special Services	3,609,000	3,789,450	3,978,923	4,177,869	4,386,762	4,606,100	4,836,405	5,078,225	5,332,137	5,598,744	5,878,681	6,172,615	8,685,489	9,119,763	9,575,751	10,054,539	10,557,266	0
TOTAL LABOR COSTS	85,969,203	91,077,705	96,490,352	102,225,284	108,301,722	114,740,037	121,561,817	128,789,939	136,448,647	144,563,634	153,162,128	162,272,984	243,208,473	257,687,275	273,029,522	289,286,785	306,513,719	0

TABLE 13.-
CASH FLOW STATEMENT: REVITALIZED HOSPITAL ("With Project")
Nominal Values (Rand)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
In-patient		3,892,406	5,773,771	6,592,245	7,495,810	8,021,973	8,585,191	9,188,081	9,833,443	10,465,342	11,120,508	11,817,797	12,559,979	19,287,447	20,513,719	21,819,899	23,211,303	24,693,607	-
Out-patients		861,437	1,204,078	1,289,567	1,381,126	1,479,186	1,584,209	1,696,688	1,817,152	1,946,170	2,084,348	2,232,337	2,390,833	3,864,342	4,138,710	4,432,558	4,747,270	5,084,326	-
Total Revenue		4,853,843	6,977,849	7,881,812	8,876,937	9,501,159	10,169,400	10,884,769	11,650,595	12,411,513	13,204,856	14,050,133	14,950,812	23,151,789	24,652,429	26,252,458	27,958,573	29,777,933	-
Change in Accounts Receivable		-	(191,160)	(81,357)	(89,561)	(56,180)	(60,142)	(64,383)	(68,924)	(68,483)	(71,401)	(76,075)	(81,061)	(126,677)	(135,058)	(144,003)	(153,550)	(163,742)	2,680,014
Liquidation Values																			-
Land																			-
Building																			139,634,465
Equipment																			-
TOTAL CASH INFLOW		4,853,843	6,786,688	7,800,455	8,787,375	9,444,979	10,109,258	10,820,385	11,581,671	12,343,030	13,133,455	13,974,059	14,869,751	23,025,112	24,517,371	26,108,455	27,805,023	29,614,191	142,314,479
EXPENDITURES																			
INVESTMENT COST																			
Land and Decommissioning Costs		5,940,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building		79,891,000	21,342,300	11,204,708	3,920,876	3,889,620	5,834,430	1,021,025	-	-	-	-	-	-	-	-	-	-	-
Equipment		14,868,000	4,725,000	2,480,625	636,694	5,834,430	1,021,025	-	-	-	-	-	-	-	-	-	-	-	-
Total Investment Cost		100,699,000	26,067,300	13,685,333	4,557,570	9,724,050	1,021,025	-	-	-	-	-	-	-	-	-	-	-	-
OPERATING COST																			
Skilled/Semiskilled		44,222,190	32,766,905	34,749,303	36,851,635	39,081,159	41,445,569	43,953,026	46,612,184	49,432,222	52,422,871	55,594,455	58,957,919	88,944,041	94,325,156	100,031,828	106,083,753	112,501,820	-
Unskilled		6,015,420	3,127,888	3,300,703	3,483,607	3,675,507	3,878,579	4,092,870	4,319,001	4,557,626	4,809,435	5,075,156	5,355,558	7,803,551	8,234,697	8,689,664	9,169,768	9,676,398	-
Allowances and Bonus		11,957,861	8,660,909	9,182,431	9,735,369	10,121,616	10,943,179	11,602,187	12,300,896	13,021,699	13,827,133	14,659,887	15,542,814	23,406,543	24,816,494	26,311,407	27,896,404	29,576,915	-
Professional & Special Services		3,054,000	2,623,950	2,755,148	2,892,905	3,037,550	3,346,898	3,516,344	3,692,161	3,876,789	4,070,608	4,274,138	4,470,608	6,014,141					

TABLE 14.-
CASH FLOW STATEMENT: CURRENT SITUATION ("Without Project")
Nominal Values (Rand)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
In-patient		2,753,165	3,035,364	3,331,616	3,642,497	3,748,130	3,856,825	3,968,673	4,083,765	4,202,194	4,324,058	4,449,455	4,578,489	5,592,807	5,754,998	5,921,893	6,093,628	6,270,344	-
Out-patients		608,394	670,754	736,220	804,918	828,261	852,280	876,997	902,429	928,600	955,529	983,240	1,011,754	1,235,897	1,271,738	1,308,619	1,346,569	1,385,619	-
Total Revenue		3,361,559	3,706,118	4,067,835	4,447,415	4,576,390	4,709,106	4,845,670	4,986,194	5,130,794	5,279,587	5,432,695	5,590,243	6,828,704	7,026,737	7,230,512	7,440,197	7,655,963	-
Change in Accounts Receivable		-	(31,010)	(32,555)	(34,162)	(11,608)	(11,944)	(12,291)	(12,647)	(13,014)	(13,391)	(13,780)	(14,179)	(17,321)	(17,823)	(18,340)	(18,872)	(19,419)	689,037
Liquidation Values																			
Land																			18,244,851
Building																			-
Equipment																			-
TOTAL CASH INFLOW		3,361,559	3,675,108	4,035,281	4,413,253	4,564,783	4,697,161	4,833,379	4,973,547	5,117,780	5,266,195	5,418,915	5,576,064	6,811,384	7,008,914	7,212,172	7,421,325	7,636,544	18,933,888
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land		5,940,000																	
Building		10,000,000																	
Equipment		1,000,000																	
Total Investment Cost		16,940,000																	
OPERATING COST																			
Skilled/Semiskilled		57,546,780	61,028,360	64,720,576	68,636,171	72,788,659	77,192,373	81,862,512	86,815,194	92,067,513	97,637,597	103,544,672	109,809,125	165,658,277	175,680,602	186,309,279	197,580,990	209,534,640	
Unskilled		9,066,720	9,567,656	10,096,269	10,654,088	11,242,727	11,863,887	12,519,367	13,211,062	13,940,973	14,711,212	15,524,006	16,381,708	23,869,686	25,188,486	26,580,150	28,048,703	29,598,394	
Allowances and Bonus		15,746,703	16,692,238	17,694,584	18,757,156	19,883,574	21,077,676	22,343,533	23,685,458	25,108,024	26,616,081	28,214,769	29,909,537	44,995,022	47,698,423	50,564,342	53,602,553	56,823,419	
Professional & Special Services		3,609,000	3,789,450	3,978,923	4,177,869	4,386,762	4,606,100	4,836,405	5,078,225	5,332,137	5,598,744	5,878,681	6,172,615	8,685,489	9,119,763	9,575,751	10,054,539	10,557,266	
Medicines and Supplies		4,970,000	5,114,130	5,279,425	5,453,396	5,641,066	5,843,119	6,060,275	6,293,289	6,542,954	6,809,606	7,095,606	7,400,381	11,960,899	12,558,942	13,186,890	13,846,234	14,538,546	

Working Capital																		
Change in Accounts Payable	-	(41,429)	(75,179)	(62,071)	(64,734)	(67,518)	(70,427)	(73,469)	(76,648)	(79,972)	(83,448)	(87,083)	(117,641)	(122,847)	(128,294)	(133,992)	(139,955)	3,461,998
Change in Cash Balance	-	34,456	36,172	37,958	(361,915)	2,402	2,472	2,543	2,617	2,693	2,771	2,851	3,483	3,584	3,688	3,795	3,905	(138,562)
Accounts Receivable Not Paid	201,694	222,367	244,070	266,845	274,583	282,546	290,740	299,172	307,848	316,775	325,962	335,415	409,722	421,604	433,831	446,412	459,358	
TOTAL OUTFLOW	112,634,897	101,093,295	106,996,802	113,183,210	119,296,412	126,554,343	133,850,992	141,574,366	149,749,633	158,403,449	167,564,054	177,261,359	263,083,440	278,388,000	294,592,423	311,749,956	329,917,016	3,323,436
NET CASH FLOW	(109,273,338)	(97,418,187)	(102,961,521)	(108,769,957)	(114,731,630)	(121,857,181)	(129,017,613)	(136,600,819)	(144,631,853)	(153,137,254)	(162,145,138)	(171,685,296)	(256,272,056)	(271,379,087)	(287,380,250)	(304,328,631)	(322,280,472)	15,610,451

TABLE 15.-
INCREMENTAL CASH FLOW STATEMENT: (REVITALIZED HOSPITAL "With Project" - CURRENT SITUATION "Without Project")
Nominal Values (Rand)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
In-patient		1,139,241	2,738,407	3,260,629	3,853,313	4,273,843	4,728,366	5,219,408	5,749,678	6,263,148	6,796,450	7,368,341	7,981,490	13,894,640	14,758,721	15,898,006	17,117,675	18,423,263	-
Out-patients		353,044	553,324	553,348	575,208	613,928	619,891	619,891	614,723	1,017,570	1,128,819	1,249,097	1,379,079	2,866,444	2,866,972	3,123,940	3,408,701	3,688,707	-
Total Revenue		1,492,285	3,271,730	3,813,976	4,429,521	4,924,769	5,460,294	6,039,099	6,664,401	7,280,719	7,925,269	8,617,439	9,360,569	16,323,085	17,625,692	19,021,945	20,518,376	22,121,970	-
Change in Accounts Receivable		-	(160,150)	(48,802)	(55,399)	(44,572)	(48,197)	(52,092)	(56,277)	(55,469)	(58,010)	(62,295)	(66,882)	(109,356)	(117,235)	(125,663)	(134,679)	(144,323)	1,990,977
Liquidation Values		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(18,244,851)
Building		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	139,634,465
Equipment		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CASH INFLOW		1,492,285	3,111,580	3,765,174	4,374,122	4,880,197	5,412,097	5,987,006	6,608,124	7,225,250	7,867,260	8,555,143	9,293,687	16,213,728	17,508,458	18,896,283	20,383,698	21,977,647	123,380,591
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land and Decommissioning Costs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building		69,891,000	21,342,300	11,204,708	3,920,876	3,889,620	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment		13,868,000	4,725,000	2,480,625	636,694	5,834,430	1,021,025	-	-	-	-	-	-	-	-	-	-	-	-
Total Investment Cost		83,759,000	26,067,300	13,685,333	4,557,570	9,724,050	-	-	-	-	-	-	-	-	-	-	-	-	-
OPERATING COST																			
Skilled/Semiskilled		(13,324,590)	(28,261,455)	(29,971,273)	(31,784,535)	(33,707,500)	(35,746,804)	(37,909,485)	(40,203,009)	(42,635,291)	(45,214,726)	(47,950,217)	(50,851,205)	(76,714,236)	(81,355,447)	(86,277,451)	(91,497,237)	(97,032,820)	-
Unskilled		(3,051,300)	(6,439,769)	(6,795,566)	(7,171,021)	(7,567,220)	(7,985,309)	(8,426,497)	(8,892,061)	(9,383,347)	(9,901,777)	(10,448,850)	(11,026,149)	(16,066,135)	(16,953,788)	(17,890,485)	(18,878,935)	(19,921,996)	-
Allowances and Bonus		(3,788,843)	(8,031,329)	(8,512,153)	(9,021,787)	(9,561,958)	(10,134,497)	(10,741,346)	(11,384,561)	(12,066,325)	(12,788,948)	(13,554,882)	(14,366,724)	(21,588,479)	(22,881,930)	(24,252,936)	(25,706,149)	(27,246,504)	-
Professional & Special Services		(555,000)	(1,165,500)	(1,223,775)	(1,284,964)	(1,349,212)	(1,416,673)	(1,487,506)	(1,561,881)	(1,639,976)	(1,721,974)	(1,808,073)	(1,898,477)	(2,671,347)	(2,804,915)	(2,945,160)	(3,092,414)	(3,247,039)	-
Medicines and Supplies		(131,500)	(72,933)	(80,303)	29,063	29,063	289,599	443,366	614,711	805,214	1,016,586	1,250,676	1,509,482	4,218,214	4,768,886	5,371,215	6,029,496	6,748,361	-
Minor Equipment		(201,500)	(356,223)	(303,939)	(245,692)	(180,995)	(109,323)	(30,111)	57,248	153,405	259,059	374,963	501,923	1,781,743	2,034,368	2,308,588	2,606,041	2,928,485	-
Administrative Expenses and Services		(176,000)	(261,114)	(160,415)	(49,108)	73,660	208,806	357,315	520,245	698,731	893,996	1,107,348	1,340,195	3,657,845	4,111,408	4,602,795	5,134,855	5,710,845	-
Total Operating Cost		(21,228,733)	(44,586,323)	(47,047,424)	(49,528,044)	(52,141,276)	(54,894,200)	(57,794,264)	(60,849,310)	(64,067,589)	(67,457,785)	(71,029,035)	(74,790,955)	(107,382,394)	(113,081,418)	(119,083,435)	(125,404,348)	(132,060,869)	-
Working Capital																			
Change in Accounts Payable		-	27,191	(21,842)	(41,838)	(46,552)	(51,670)	(57,223)	(63,245)	(69,772)	(76,844)	(84,502)	(92,792)	(173,093)	(188,529)	(205,190)	(223,169)	(242,565)	2,308,124
Change in Cash Balance		-	177,945	54,225	61,554	424,338	64,422	69,065	74,039	73,475	76,641	81,757	87,216	157,269	146,480	156,315	166,817	178,031	(2,839,231)
Accounts Receivable Not Paid		89,537	196,304	228,839	265,771	295,486	327,618	362,346	399,864	436,843	475,516	517,046	561,634	979,385	1,057,542	1,141,317	1,231,103	1,327,318	-
TOTAL OUTFLOW		62,619,805	(18,119,584)	(33,100,870)	(44,684,986)	(41,743,955)	(53,532,805)	(57,420,076)	(60,438,651)	(63,627,043)	(66,982,471)	(70,514,734)	(74,234,895)	(106,438,833)	(112,065,925)	(117,990,994)	(124,229,598)	(130,798,084)	(531,108)
NET CASH FLOW		(61,127,520)	21,231,165	36,866,044	49,059,108	46,624,152	58,944,902	63,407,082	67,046,775	70,852,293	74,849,731	79,069,878	83,528,584	122,652,561	129,574,383	136,887,242	144,613,296	152,775,731	123,911,699

TABLE 16.-
INCREMENTAL CASH FLOW STATEMENT: (REVITALIZED HOSPITAL "With Project" - CURRENT SITUATION "Without Project")
Real Values (Rand of 2004)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
In-patient		1,139,241	2,608,006	2,957,487	3,328,637	3,516,102	3,704,798	3,894,802	4,086,189	4,239,145	4,381,053	4,523,522	4,666,612	5,690,406	5,840,527	5,991,791	6,144,259	6,297,990	-
Out-patients		353,044	507,927	501,903	535,518	573,485	611,666	650,076	688,732	727,647	766,837	806,319	846,319	1,092,173	1,134,558	1,177,380	1,220,656	1,264,403	-
Total Revenue		1,492,285	3,115,934	3,459,389	3,826,387	4,051,620	4,278,283	4,506,468	4,736,265	4,927,877	5,108,699	5,290,360	5,472,931	6,782,579	6,975,085	7,169,171	7,364,915	7,562,393	-
Change in Accounts Receivable		-	(152,524)	(44,265)	(47,856)	(36,670)	(37,764)	(38,872)	(39,995)	(37,543)	(37,393)	(38,244)	(39,104)	(45,440)	(46,394)	(47,361)	(48,342)	(49,337)	648,205
Liquidation Values		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(5,940,000)
Building		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45,460,975
Equipment		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CASH INFLOW		1,492,285	2,963,410	3,415,124	3,778,531	4,014,950	4,240,520	4,467,596	4,696,270	4,890,334	5,071,306	5,252,116	5,433,827	6,737,139	6,928,691	7,121,810	7,316,573	7,513,066	40,169,180
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land and Decommissioning Costs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building		69,891,000	20,326,000	10,163,000	3,387,000	3,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment		13,868,000	4,500,000	2,250,000	550,000	4,800,000	800,000	-	-	-	-	-	-	-	-	-	-	-	-
Total Investment Cost		83,759,000	24,826,000	12,413,000	3,937,000	8,000,000	800,000	-	-	-	-	-	-	-	-	-	-	-	-
OPERATING COST																			
Skilled/Semiskilled		(13,324,590)	(26,915,672)	(27,184,829)	(27,456,677)	(27,731,244)	(28,008,556)	(28,288,642)	(28,571,528)	(28,857,243)	(29,145,816)	(29,437,274)	(29,731,647)	(31,876,349)	(32,195,113)	(32,517,064)	(32,842,235)	(33,170,657)	-
Unskilled		(3,051,300)	(6,133,113)	(6,163,779)	(6,194,597)	(6,225,570)	(6,256,698)	(6,287,982)	(6,319,422)	(6,351,019)	(6,382,774)	(6,414,688)	(6,446,761)	(6,675,811)	(6,709,190)	(6,742,736)	(6,776,449)	(6,810,332)	-
Allowances and Bonus		(3,788,843)	(7,648,885)	(7,720,774)	(7,793,359)	(7,866,646)	(7,940,644)	(8,015,358)	(8,090,795)	(8,166,964)	(8,243,870)	(8,321,522)	(8,399,926)	(8,970,459)	(9,055,157)	(9,140,676)	(9,227,026)	(9,314,214)	-
Professional & Special Services		(555,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	(1,110,000)	-
Medical Supplies		(131,500)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	(25,460)	-
Minor Equipment		(201,500)	(339,260)	(275,581)	(212,238)	(148,905)	(85,657)	(22,669)	40,685	103,830	166,992	210,195	293,646	740,351	805,069	870,082	935,418	1,001,102	-
Administrative Expenses and Services		(176,000)	(248,880)	(145,501)	(42,421)	60,600	163,605	266,534	369,728	472,929	576,278	679,816	783,584	1,519,910	1,627,024	1,734,745	1,843,117	1,952,183	-
Total Operating Cost		(21,228,733)	(42,465,070)	(42,673,400)	(42,784,186)	(42,896,757)	(43,011,042)	(43,126,970)	(43,244,468)	(43,363,466)	(43,483,890)	(43,605,666)	(43,728,722)	(44,619,603)	(44,750,157)	(44,881,294)	(45,012,933)	(45,144,991)	-
Working Capital																			
Change in Accounts Payable		-	25,896	(19,811)	(38,299)	(53,143)	(40,485)	(42,701)	(44,947)	(47,224)	(49,534)	(51,877)	(54,254)	(71,924)	(74,607)	(77,334)	(80,105)	(82,921)	751,459
Change in Cash Balance		-	169,471	49,183	56,171	50,476	52,618	49,731	52,618	49,731	49,404	50,192	50,594	57,038	57,967	58,913	59,878	60,860	(924,372)
Accounts Receivable Not Paid		89,537	186,956	207,563	229,583	243,097	256,697	270,388	284,176	295,673	306,522	317,422	328,378	406,955	418,505	430,150	441,895	453,744	-
TOTAL OUTFLOW		62,619,805	(17,256,747)	(30,023,465)	(38,600,571)	(34,342,855)	(41,944,354)	(42,847,745)	(42,952,621)	(43,065,287)	(43,177,498)	(43,289,930)	(43,403,066)	(44,227,533)	(44,348,292)	(44,469,565)	(44,591,266)	(44,713,308)	(172,913)
NET CASH FLOW		(61,127,520)	20,220,157	33,438,589	42,379,102	38,357,805	46,184,873	47,315,341	47,648,891	47,955,621	48,248,804	48,542,046	48,837,433	50,964,673	51,276,983	51,591,375	51,907,838	52,226,364	40,342,090

A. REVITALIZED HOSPITAL ("With Project")	73,348,450	680,311,473	-606,963,023	642,046	945	1,060
B. CURRENT SITUATION ("Without Project")	31,313,778	920,015,039	-888,701,261	528,247	1,682	1,742
C. INCREMENTAL ANALYSIS (C = A - B)	42,034,672	-239,703,566	281,738,238	113,799	-737	-682

TABLE 18 -
YEARLY FINANCIAL RESULTS
LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT
All figures in Nominal Rand (5% annual inflation rate)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026
A. REVITALIZED HOSPITAL ("With Project")																	
Number of Patient-days	60,190	63,832	67,967	72,017	72,465	72,921	73,387	73,862	74,289	74,707	75,134	75,569	78,871	79,381	79,902	80,432	80,974
Projected Revenues from Fees and Tariffs	4,853,843	6,786,688	7,800,455	8,787,375	9,444,979	10,109,258	10,820,385	11,581,671	12,343,030	13,133,455	13,974,059	14,869,751	23,025,112	24,517,371	26,108,455	27,805,023	29,614,191
Projected Investment Costs	83,759,000	26,067,300	13,685,333	4,557,570	9,724,050	1,021,025	-	-	-	-	-	-	-	-	-	-	-
Projected Recurrent Expenses	74,555,701	56,906,410	60,210,600	63,940,655	67,828,407	72,000,512	76,430,915	81,135,715	86,122,590	91,420,978	97,049,319	103,026,463	156,644,607	166,322,075	176,601,429	187,520,358	199,118,932
B. CURRENT SITUATION ("Without Project")																	
Number of Patient-days	57,443	60,316	63,050	65,651	64,338	63,051	61,790	60,554	59,343	58,156	56,993	55,853	48,488	47,518	46,568	45,636	44,723
Projected Revenues from Fees and Tariffs	3,361,559	3,675,108	4,035,281	4,413,253	4,564,783	4,697,161	4,833,379	4,973,547	5,117,780	5,266,195	5,418,915	5,576,064	6,811,384	7,008,914	7,212,172	7,421,325	7,636,544
Projected Recurrent Expenses	95,694,897	101,093,295	106,996,802	113,183,210	119,296,412	126,554,343	133,850,992	141,574,366	149,749,633	158,403,449	167,564,054	177,261,359	263,083,440	278,388,000	294,592,423	311,749,956	329,917,016
C. INCREMENTAL ANALYSIS (C = A - B)																	
Number of Patient-days	2,747	3,517	4,917	6,366	8,127	9,870	11,597	13,307	14,945	16,551	18,141	19,716	30,383	31,863	33,334	34,796	36,250
Projected Revenues from Fees and Tariffs	1,492,285	3,111,580	3,765,174	4,374,122	4,880,197	5,412,097	5,987,006	6,608,124	7,225,250	7,867,260	8,555,143	9,293,687	16,213,728	17,508,458	18,896,283	20,383,698	21,977,647
Projected Investment Costs	83,759,000	26,067,300	13,685,333	4,557,570	9,724,050	1,021,025	-	-	-	-	-	-	-	-	-	-	-
Projected Recurrent Expenses	(21,139,195)	(44,186,884)	(46,786,203)	(49,242,556)	(51,468,005)	(54,553,831)	(57,420,076)	(60,438,651)	(63,627,043)	(66,982,471)	(70,514,734)	(74,234,896)	(106,438,833)	(112,065,925)	(117,990,994)	(124,229,598)	(130,798,084)
D. PROJECTED BUDGETARY SUPPORT REQUIREMENTS																	
A. REVITALIZED HOSPITAL ("With Project")	153,460,858	76,187,022	66,095,477	59,710,849	68,107,478	62,912,279	65,610,530	69,554,044	73,779,560	78,287,523	83,075,261	88,156,712	133,619,495	141,804,704	150,492,974	159,715,335	169,504,741
B. CURRENT SITUATION ("Without Project")	92,333,338	97,418,187	102,961,521	108,769,957	114,731,630	121,857,181	129,017,613	136,600,819	144,631,853	153,137,254	162,145,138	171,685,296	256,272,056	271,379,087	287,380,250	304,328,631	322,280,472
C. INCREMENTAL ANALYSIS (C = A - B)	61,127,520	(21,231,165)	(36,866,044)	(49,059,108)	(46,624,152)	(58,944,902)	(63,407,082)	(67,046,775)	(70,852,293)	(74,849,731)	(79,069,878)	(83,528,584)	(122,652,561)	(129,574,383)	(136,887,277)	(144,613,296)	(152,775,731)

TABLE 19 -
YEARLY FINANCIAL RESULTS
LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT
All figures in Real Rand (Year 0)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026
A. REVITALIZED HOSPITAL ("With Project")																	
Number of Patient-days	60,190	63,832	67,967	72,017	72,465	72,921	73,387	73,862	74,289	74,707	75,134	75,569	78,871	79,381	79,902	80,432	80,974
Projected Revenues from Fees and Tariffs	4,853,843	6,463,512	7,075,243	7,590,865	7,770,408	7,920,868	8,074,338	8,230,877	8,354,249	8,465,942	8,578,860	8,694,035	9,567,410	9,702,356	9,840,002	9,980,401	10,123,607
Projected Investment Costs	83,759,000	24,826,000	12,413,000	3,937,000	8,000,000	800,000	-	-	-	-	-	-	-	-	-	-	-
Projected Recurrent Expenses	74,555,701	54,196,581	54,612,789	55,234,341	55,802,599	56,414,285	57,033,926	57,661,638	58,291,159	58,930,778	59,579,863	60,237,439	65,089,070	65,819,293	66,559,221	67,309,001	68,068,781
B. CURRENT SITUATION ("Without Project")																	
Number of Patient-days	57,443	60,316	63,050	65,651	64,338	63,051	61,790	60,554	59,343	58,156	56,993	55,853	48,488	47,518	46,568	45,636	44,723
Projected Revenues from Fees and Tariffs	3,361,559	3,500,103	3,660,119	3,812,334	3,755,458	3,680,349	3,606,742	3,534,607	3,463,915	3,394,637	3,326,744	3,260,209	2,830,271	2,773,665	2,718,192	2,663,828	2,610,551
Projected Recurrent Expenses	95,694,897	96,279,328	97,049,254	97,771,913	98,145,454	99,158,639	99,881,671	100,614,259	101,356,446	102,108,276	102,869,793	103,641,045	109,316,603	110,167,585	111,028,786	111,900,267	112,782,089
C. INCREMENTAL ANALYSIS (C = A - B)																	
Number of Patient-days	2,747	3,517	4,917	6,366	8,127	9,870	11,597	13,307	14,945	16,551	18,141	19,716	30,383	31,863	33,334	34,796	36,250
Projected Revenues from Fees and Tariffs	1,492,285	2,963,410	3,415,124	3,779,551	4,014,950	4,240,520	4,467,596	4,696,270	4,890,334	5,071,306	5,252,116	5,433,627	6,737,139	6,928,693	7,121,810	7,316,573	7,513,056
Projected Investment Costs	83,759,000	24,826,000	12,413,000	3,937,000	8,000,000	800,000	-	-	-	-	-	-	-	-	-	-	-
Projected Recurrent Expenses	(21,139,195)	(42,082,747)	(42,436,465)	(42,537,571)	(42,342,855)	(42,744,354)	(42,847,745)	(42,952,621)	(43,065,287)	(43,177,498)	(43,289,930)	(43,403,606)	(44,227,533)	(44,348,292)	(44,469,565)	(44,591,266)	(44,713,308)
D. PROJECTED BUDGETARY SUPPORT REQUIREMENTS																	
A. REVITALIZED HOSPITAL ("With Project")	153,460,858	72,559,069	59,550,546	51,580,476	56,032,191	49,293,417	48,959,588	49,430,761	49,936,910	50,464,835	51,001,004	51,543,404	55,521,660	56,116,937	56,719,219	57,328,600	57,945,174
B. CURRENT SITUATION ("Without Project")	92,333,338	92,779,225	93,389,135	93,959,579	94,389,996	95,478,290	96,274,929	97,079,652	97,892,531	98,713,639	99,543,049	100,380,837	106,486,333	107,393,920	108,310,594	109,236,438	110,171,538
C. INCREMENTAL ANALYSIS (C = A - B)	61,127,520	(20,220,157)	(33,438,589)	(42,379,102)	(38,357,805)	(46,184,873)	(47,315,341)	(47,648,891)	(47,955,621)	(48,248,804)	(48,542,046)	(48,837,433)	(50,964,673)	(51,276,983)	(51,591,375)	(51,907,838)	(52,226,364)

ECONOMIC ANALYSIS

TABLE 20 -
Quality Adjusted Life Years (QALY)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																		
Infectious and Parasitic Diseases	11,117	12,921	13,529	14,128	14,289	14,454	14,621	14,793	14,960	15,129	15,301	15,477	16,809	17,015	17,225	17,439	17,657	
Endocrine, Nutritional and Metabolic Diseases	1,900	2,209	2,313	2,415	2,442	2,471	2,499	2,529	2,557	2,586	2,616	2,646	2,873	2,908	2,944	2,981	3,018	
Diseases of the Blood and Blood-Forming Organs	2,264	2,631	2,755	2,877	2,903	2,939	2,977	3,012	3,046	3,080	3,116	3,151	3,423	3,464	3,501	3,551	3,595	
Diseases of the Nervous System and Sense Organs	2,678	3,112	3,259	3,403	3,442	3,481	3,522	3,563	3,603	3,644	3,686	3,728	4,049	4,098	4,149	4,200	4,253	
Diseases of the Circulatory and Respiratory System	1,258	1,462	1,531	1,598	1,617	1,635	1,654	1,674	1,693	1,712	1,731	1,751	1,902	1,925	1,949	1,973	1,998	
Diseases of the Digestive System	4,147	4,820	5,047	5,270	5,392	5,454	5,518	5,581	5,644	5,708	5,773	5,837	6,270	6,347	6,424	6,505	6,587	
Diseases of the Genitourinary System	3,967	4,495	4,706	4,915	4,971	5,028	5,086	5,146	5,204	5,263	5,323	5,384	5,847	5,919	5,992	6,067	6,143	
Diseases of the Skin and Subcutaneous Tissue	3,470	4,033	4,223	4,410	4,460	4,511	4,564	4,619	4,676	4,732	4,789	4,847	5,247	5,311	5,376	5,443	5,511	
Diseases Musculoskeletal Syst. & Connective Tissue	1,250	1,453	1,521	1,588	1,607	1,625	1,644	1,663	1,682	1,701	1,720	1,740	1,890	1,913	1,937	1,961	1,985	
Injury and Poisoning	8,748	10,168	10,646	11,118	11,245	11,374	11,506	11,641	11,773	11,905	12,041	12,179	13,228	13,390	13,555	13,723	13,895	
Maternity	1,824	2,120	2,219	2,318	2,344	2,371	2,399	2,427	2,454	2,482	2,510	2,539	2,758	2,791	2,826	2,861	2,897	
TOTAL QALY	42,521	49,423	51,747	54,039	54,656	55,285	55,927	56,582	57,223	57,869	58,527	59,199	64,294	65,082	65,885	66,704	67,539	-
CURRENT SITUATION ("Without Project")																		
Infectious and Parasitic Diseases	10,585	11,114	11,618	12,097	11,855	11,618	11,386	11,158	10,935	10,716	10,502	10,292	8,935	8,756	8,581	8,409	8,241	
Endocrine, Nutritional and Metabolic Diseases	1,809	1,900	1,986	2,067	2,087	2,106	2,126	2,146	2,166	2,186	2,206	2,226	1,759	1,789	1,819	1,849	1,879	
Diseases of the Blood and Blood-Forming Organs	2,155	2,263	2,366	2,463	2,414	2,366	2,318	2,272	2,227	2,182	2,138	2,096	1,819	1,783	1,747	1,712	1,678	
Diseases of the Nervous System and Sense Organs	2,550	2,677	2,798	2,914	2,856	2,798	2,743	2,688	2,634	2,581	2,530	2,479	2,152	2,109	2,067	2,026	1,985	
Diseases of the Circulatory and Respiratory System	1,198	1,257	1,314	1,369	1,314	1,257	1,202	1,147	1,092	1,037	982	927	1,011	971	931	891	851	
Diseases of the Digestive System	3,949	4,146	4,334	4,513	4,422	4,334	4,247	4,162	4,079	3,998	3,918	3,839	3,333	3,266	3,201	3,137	3,074	
Diseases of the Genitourinary System	3,682	3,866	4,042	4,208	4,124	4,042	3,961	3,882	3,804	3,728	3,653	3,580	3,108	3,046	2,985	2,925	2,867	

Professional & Special Services	0.93	(515,595)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190) ¹	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	(1,031,190)	-
Medicines and Supplies	0.93	(122,164)	(64,528)	(67,666)	23,324	116,133	210,798	307,356	405,846	506,306	608,774	713,292	819,901	1,628,309	1,753,218	1,880,625	2,010,580	2,143,135
Minor Equipment	0.93	(187,194)	(315,173)	(256,108)	(197,169)	(138,333)	(79,576)	(20,874)	37,796	96,458	155,135	213,851	272,628	687,786	747,909	808,307	869,004	930,024
Administrative Expenses and Services	0.85	(149,002)	(210,534)	(123,182)	(35,914)	51,305	138,509	225,734	313,014	400,384	487,880	575,535	663,386	1,286,764	1,377,447	1,468,644	1,560,392	1,652,728
Total Operating Cost		(19,598,478)	(39,208,284)	(39,406,022)	(39,513,079)	(39,621,736)	(39,731,929)	(39,843,595)	(39,956,670)	(40,071,089)	(40,186,789)	(40,303,703)	(40,421,767)	(41,274,737)	(41,399,552)	(41,524,894)	(41,650,690)	(41,776,867)
Working Capital																		
Change in Accounts Payable	0.85	-	21,923	(16,772)	(30,597)	(32,424)	(34,275)	(36,151)	(38,052)	(39,980)	(41,936)	(43,919)	(45,931)	(60,891)	(63,163)	(65,471)	(67,817)	(70,201)
Change in Cash Balance	1	-	169,471	49,183	53,173	349,104	50,476	51,538	52,618	49,731	49,404	50,192	50,994	57,038	57,967	58,913	59,878	60,860
Accounts Receivable Not Paid	1	89,537	186,956	207,563	229,583	243,097	256,697	270,388	284,176	295,673	306,522	317,422	328,376	406,955	418,505	430,150	441,895	453,744
TOTAL OUTFLOW		54,598,947	(16,843,858)	(28,173,010)	(35,782,958)	(31,799,559)	(38,715,831)	(39,557,820)	(39,657,928)	(39,765,666)	(39,872,799)	(39,980,009)	(40,088,328)	(40,871,635)	(40,986,242)	(41,101,301)	(41,216,735)	(41,332,465)
NET CASH FLOW		(54,598,947)	16,843,858	28,173,010	35,782,958	31,799,559	38,715,831	39,557,820	39,657,928	39,765,666	39,872,799	39,980,009	40,088,328	40,871,635	40,986,242	41,101,301	41,216,735	41,332,465
																		34,171,997

TABLE 24.-
ECONOMIC RESULTS
LEBOWAKGOMO HOSPITAL REVITALIZATION PROJECT
All figures in Present Values (Year 0 values)

	Outflows	Patient Days	Cost Per Patient Day	QALY'S	Cost Per QALY
	(Rand)	(#)	(Rand)	(Life years)	(Rand)
	1	2	3	4	5
A. REVITALIZED HOSPITAL ("With Project")	619,585,545	642,046	965	493,556	1,255
B. CURRENT SITUATION ("Without Project")	845,537,052	528,247	1,601	372,326	2,271
C. INCREMENTAL ANALYSIS (C = A - B)	-225,951,507	113,799	-636	121,230	-1,016

ANNEX IV

Project Appraisal Parameterized Spreadsheet Model (PAPSM)

Case Study Two:

The Revitalization Project of the Jane Furse Hospital

PROJECT APPRAISAL PARAMETERIZED SPREADSHEET MODEL FOR INCREMENTAL PROJECTS
JANE FURSE HOSPITAL REVITALIZATION PROJECT

TABLE OF PARAMETERS

TABLE 1.-

General Information of the Project

Name of the Project:	JANE FURSE HOSPITAL REVITALIZATION PROJECT									
Construction starts on year:	2004	↓								
Operation starts on year:	2006	↓								
The Revitalized Facility (With Project) will operate during construction ? =	Yes		↓							
	2004	2005	2006	2007	2008	2009	2010	2011	2012	Year
If Yes: Operation Profile of the Revitalized Facility	50%	65%	90%	100%	100%	100%	100%	100%	100%	Cumulative Percentage
Maximum Occupation Capacity	70.0%	75.0%	80.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	Percentage

TABLE 2.-

Main Variables for the Project

REVITALIZED HOSPITAL ("With Project")							
Capacity and Utilization							
In-patient	Patient Differentiation	Medical	Tubercul.	Surgery	Maternity	Pediatrics	TOTAL
Number of Usable Beds		56	40	51	55	50	252
Average Daily In-Patient Admission		6	1	12	20	7	
Average Length of Stay in Days		6.5	30	3.8	3.3	4.2	
Annual Percentage Increase in Admission		2.0% (Increment until full capacity is reached)					
Out-patient							
General OPD clinic headcount		24,510 Patients					
Specialist OPD clinic headcount		2,279 Patients					
CAS (Casualty) headcount		11,788 Patients					
Distribution		Medical	Tubercul.	Surgery	Maternity	Pediatrics	
		22.2%	15.9%	20.2%	21.8%	19.8%	
Annual Percentage Increase in Admission		2.0%					
Out-patient Visit/Patient-day		6.8					
Tariff Fee Schedule							
		Medical	Tubercul.	Surgery	Maternity	Pediatrics	
Average fee In-patients		116	117	116	128	120	Per Day
Average fee Out-patients		70	71	70	76	72	Per Day
Administrative Expenses							
General Expenses		739,360 Rand per year					
Services: Tel, Water, Electricity		617,531 Rand per year					
Labor Costs (operation of the facility)							
		Number	Wage		Allowances and Bonus		
Skilled/Semiskilled Category		341	6,437	Rand/month	25%	Percentage of Basic Wage	
Unskilled Category		70	1,453	Rand/month	15%	Percentage of Basic Wage	
Professional & Special Services		1,196,179 Rand per year					
Medicines, Supplies and Minor Equipment							
Medicines and Supplies		2,646,693 Rand per year					
Minor Equipment		509,972 Rand per year					

CURRENT SITUATION ("Without Project")						
Capacity and Utilization						
In-patient	Medical	Tubercul.	Surgery	Maternity	Pediatrics	TOTAL
Number of Usable Beds	52	36	40	50	46	224
Average Daily In-Patient Admission	4	1	5	14	4	
Average Length of Stay	6.5	35	4	3.5	5	
Annual % Increase(Decrease) in Admission	-2.0% (Increment until full capacity is reached)					
Out-patient						
General OPD clinic headcount	14,706 Patients					
Specialist OPD clinic headcount	1,367 Patients					
CAS (Casualty) headcount	7,073 Patients					
Distribution	Medical	Tubercul.	Surgery	Maternity	Pediatrics	
	22.2%	15.9%	20.2%	21.8%	19.8%	
Annual % Increase(Decrease) in Admission	-2.0%					
Out-patient Visit/Patient-day	6.8					
Tariff Fee Schedule						
	Medical	Tubercul.	Surgery	Maternity	Pediatrics	
Average fee In-patients	116	117	116	128	120	Per Day
Average fee Out-patients	70	71	70	76	72	Per Day
Administrative Expenses						
General Expenses	517,552 Rand per year					
Services: Tel, Water, Electricity	432,272 Rand per year					
Labor Costs						
	Number	Wage		Allowances and Bonus		
Skilled/Semiskilled Category	264	6,437	Rand/month	25%	Percentage of Wage	
Unskilled Category	70	1,453	Rand/month	15%	Percentage of Wage	
Professional & Special Services	717,707 Rand per year					
Medicines, Supplies and Minor Equipment						
Medicines and Supplies	1,854,085 Rand per year					
Minor Equipment	331,482 Rand per year					
Value of Existing Assets						
	Est. Value	Estimated Remaining Life				
Land	1,000,000	Rand	15			
Building	12,700,000	Rand	5			
Equipment	950,000	Rand				

TABLE 3.-

Estimated Project Investment Costs (Rand of Year 0)

REVITALIZED HOSPITAL ("With Project")

Year	2004	2005	2006	2007	2008	2009	2010	2011	Estimated Life (Economic Depreciation)	Estimated Liquidation Value
Land	-	-	-	-	-	-	-	-	-----	-----
Decommissioning of the Old Facility	-	-	-	-	-	-	-	-	-----	-----
Buildings										
Maternity: Civil Works & Fence		14,068,809							40	5,979,244
Casualty: Pharmacy, Lab, X-Ray, Staff Accom.		22,100,780							40	9,392,832
2 Wards: Theatre & CSSD Kitchen, Adm.			31,535,982						40	13,402,792
3 Wards: mortuary, workshop, incinerator, Shelter			45,000,000						40	19,125,000
Equipment										
Eq1		2,737,000							20	-
Eq2		2,415,000							20	-
Eq3			2,012,500						20	-
Eq4			1,610,000						20	-
TOTAL	-	41,321,589	80,158,482	-	-	-	-	-		
Cost Over-run Factor	0%		Percentage							

TABLE 4.-

Macroeconomic Parameters				
EXCHANGE & INFLATION RATES			TAXES	
Average Domestic Inflation Rate	5.0%	Projected Annual Rate	Import Duty on Equipment	15.0%
Average Foreign Inflation Rate (US\$)	2.5%	Projected Annual Rate		
Real Exchange Rate (R/US\$)	7.00		DISCOUNT RATES	
Appreciation/Depreciation Factor	0.0%	Annual Rate	Economic Opportunity Cost of Capital (Real)	11.4% Annual
			Financial Opportunity Cost of Capital (Real)	11.4% Annual
WORKING CAPITAL			REAL GROWTH IN WAGES	
Accounts Receivable	15.0%	of revenue	Skilled/Semiskilled Categories	1.0% Percentage per year
Bad Debts	40.0%	of accounts receivable	Unskilled Labor	0.5% Percentage per year
Accounts Payable	15.0%	of total purchases		
Cash Balance	10.0%	of revenue		

TABLE 5 -
Treatment Impact Variables and Quality Adjusted Life Years (QALY) Parameters

	Type of Treatment "With Project"	Type of Treatment "Without Project"	Expected Years of Life Increased By Treatment "With Project"	Expected Years of Life Increased By Treatment "Without Project"	QALYs
Infectious and Parasitic Diseases	14%	14%	5.75	5.75	0.86
Endocrine, Nutritional and Metabolic Diseases	9%	9%	1.58	1.58	0.63
Diseases of the Blood and Blood-Forming Organs	11%	11%	1.31	1.31	0.98
Diseases of the Nervous System and Sense Organs	6%	6%	3.28	3.28	0.84
Diseases of the Circulatory and Respiratory System	6%	6%	1.46	1.46	0.89
Diseases of the Digestive System	10%	10%	2.9	2.9	0.89
Diseases of the Genitourinary System	9%	9%	3.09	3.09	0.86
Diseases of the Skin and Subcutaneous Tissue	4%	4%	5.85	5.85	0.92
Diseases of the Musculoskeletal System and Connective Tissue	8%	8%	1.09	1.09	0.89
Injury and Poisoning	12%	12%	5.21	5.21	0.87
Maternity	11%	11%	1.04	1.04	0.99
Total	100%	100%			
Percentage of Discharged Patients	92%				

FINANCIAL ANALYSIS

TABLE 6 -
Inflation and Exchange Rates

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 ¹	2022	2023	2024	2025	2026	2027
INFLATION RATE																			
Domestic Inflation Rate		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Domestic Inflation Index		1	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48	1.55	1.63	1.71	2.41	2.53	2.65	2.79	2.93	3.07
Foreign Inflation Rate (US)		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Inflation Index (US)		1.00	1.02	1.05	1.08	1.10	1.13	1.16	1.19	1.21	1.24	1.28	1.31	1.55	1.59	1.63	1.67	1.71	1.75
Relative inflation rate		1.00	1.02	1.05	1.08	1.10	1.13	1.16	1.19	1.22	1.25	1.28	1.31	1.55	1.59	1.63	1.67	1.71	1.76
EXCHANGE RATE																			
Real Exchange Rate		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Appreciation in real exchange rate		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nominal Exchange Rate		7.00	7.17	7.35	7.53	7.72	7.91	8.11	8.31	8.51	8.73	8.94	9.16	10.88	11.15	11.42	11.71	12.00	12.29

TABLE 7 - Number of Patient Days																			
	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 ¹	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
Number of Usable Beds																			
Medical		54	55	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	0
Tubercul.		38	39	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	0
Surgery		46	47	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	0
Maternity		53	53	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	0
Pediatrics		48	49	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	0
Total Usable Beds per Year		86,870	88,403	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	91,980	0
In-patient days																			
Medical		8,304	9,381	11,848	12,840	13,097	13,359	13,626	13,899	14,177	14,460	14,750	15,045	17,281	17,374	17,374	17,374	17,374	0
Tubercul.		8,304	8,624	9,114	9,877	10,075	10,276	10,482	10,691	10,905	11,123	11,346	11,573	12,410	12,410	12,410	12,410	12,410	0
Surgery		8,380	9,992	13,853	15,013	15,314	15,620	15,823	15,823	15,823	15,823	15,823	15,823	15,823	15,823	15,823	15,823	15,823	0
Maternity		14,691	16,345	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	17,064	0
Pediatrics		6,311	7,109	8,932	9,680	9,873	10,071	10,272	10,478	10,687	10,901	11,119	11,341	13,028	13,288	13,554	13,825	14,101	0
Total In-patient Days		45,990	51,451	59,807	64,474	65,422	66,390	67,267	67,954	68,656	69,371	70,101	70,845	75,605	75,959	76,224	76,495	76,772	0
Capacity Occupation																			
		53%	58%	65%	70%	71%	72%	73%	74%	75%	75%	76%	77%	82%	83%	83%	83%	83%	0
Out-patient visits																			
General OPD		17,402	20,033	25,500	26,010	26,530	27,061	27,602	28,154	28,717	29,292	29,878	30,475	35,006	35,706	36,421	37,149	37,892	0
Specialist OPD		1,618	1,863	2,371	2,418	2,467	2,516	2,567	2,618	2,670	2,724	2,778	2,834	3,255	3,320	3,386	3,454	3,523	0
CAS (Casualty)		8,370	9,635	12,264	12,510	12,760	13,015	13,275	13,541	13,812	14,088	14,370	14,657	16,836	17,173	17,516	17,867	18,224	0
Total Out-patients		27,390	31,531	40,136	40,938	41,757	42,592	43,444	44,313	45,199	46,103	47,025	47,966	55,097	56,199	57,323	58,470	59,639	0
Out-patient equivalent days																			
Medical		895	1,030	1,312	1,338	1,365	1,392	1,420	1,448	1,477	1,507	1,537	1,568	1,801	1,837	1,873	1,911	1,949	0
Tubercul.		639	736	937	956	975	994	1,014	1,034	1,055	1,076	1,098	1,120	1,286	1,312	1,338	1,365	1,392	0
Surgery		815	938	1,195	1,218	1,243	1,268	1,293	1,319	1,345	1,372	1,400	1,428	1,640	1,673	1,706	1,740	1,775	0
Maternity		879	1,012	1,288	1,314	1,340	1,367	1,394	1,422	1,451	1,480	1,509	1,540	1,768	1,804	1,840	1,877	1,914	0
Pediatrics		799	920	1,171	1,195	1,218	1,243	1,268	1,293	1,319	1,345	1,372	1,400	1,608	1,640	1,673	1,706	1,740	0
Total Out-patient Days		4,028	4,637	5,902	6,020	6,141	6,264	6,389	6,517	6,647	6,780	6,915	7,054	8,103	8,265	8,430	8,599	8,770	0
TOTAL PATIENT DAYS		50,018	56,088	65,709	70,495	71,563	72,653	73,655	74,471	75,303	76,151	77,016	77,899	83,708	84,223	84,654	85,094	85,542	0
CURRENT SITUATION ("Without Project")																			

Number of Usable Beds																		
Medical	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	0
Tubercul.	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	0
Surgery	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	0
Maternity	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	0
Pediatrics	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	0
Total Usable Beds per Year	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	81,760	0
In-patient days																		
Medical	6,643	6,975	7,291	7,592	7,440	7,291	7,146	7,003	6,863	6,725	6,591	6,450	6,307	5,495	5,385	5,278	5,172	0
Tubercul.	8,943	9,390	9,815	10,220	10,016	9,815	9,619	9,427	9,238	9,053	8,872	8,695	8,518	7,397	7,249	7,104	6,962	0
Surgery	5,110	5,366	5,609	5,840	5,609	5,497	5,387	5,279	5,173	5,070	4,969	4,869	4,768	4,227	4,143	4,060	3,978	0
Maternity	12,520	13,145	13,741	14,308	14,022	13,742	13,467	13,197	12,934	12,675	12,421	12,173	11,924	10,568	10,356	10,149	9,946	0
Pediatrics	5,110	5,366	5,609	5,840	5,609	5,497	5,387	5,279	5,173	5,070	4,969	4,869	4,768	4,313	4,227	4,143	4,060	0
Total In-patient Days	38,325	40,241	42,066	43,801	42,925	42,066	41,225	40,400	39,592	38,801	38,025	37,264	36,511	32,350	31,703	31,069	30,447	0
Capacity Occupation	47%	49%	51%	54%	53%	51%	50%	49%	48%	47%	47%	46%	45%	40%	39%	38%	37%	0
Out-patient visits																		
General OPD	10,294	10,809	11,299	11,765	11,530	11,299	11,073	10,852	10,635	10,422	10,213	10,009	9,808	8,515	8,345	8,178	8,015	0
Specialist OPD	957	1,005	1,050	1,094	1,072	1,050	1,029	1,009	989	969	949	930	908	792	776	760	745	0
CAS (Casualty)	4,951	5,199	5,434	5,658	5,545	5,434	5,326	5,219	5,115	5,013	4,912	4,814	4,719	4,096	4,014	3,933	3,855	0
Total Out-patients	16,202	17,012	17,784	18,517	18,147	17,784	17,428	17,080	16,738	16,403	16,075	15,754	15,436	13,403	13,135	12,872	12,614	0
Out-patient equivalent days																		
Medical	529	556	581	605	593	581	570	558	547	536	525	515	504	447	438	429	421	0
Tubercul.	378	397	415	432	424	415	407	399	391	383	375	368	360	319	313	307	300	0
Surgery	482	506	529	551	540	529	519	508	498	488	478	469	460	407	399	391	383	0
Maternity	520	546	571	594	582	571	559	548	537	526	516	506	496	439	430	422	413	0
Pediatrics	473	496	519	540	529	519	509	498	488	479	469	460	450	399	391	383	376	0
Total Out-patient Days	2,363	2,502	2,615	2,723	2,669	2,615	2,563	2,512	2,461	2,412	2,364	2,317	2,270	2,011	1,971	1,932	1,893	0
TOTAL PATIENT DAYS	40,708	42,743	44,681	46,524	45,593	44,681	43,788	42,912	42,054	41,213	40,389	39,581	38,785	34,361	33,674	33,000	32,340	0
INCREMENTAL PATIENT DAYS	9,310	13,345	21,028	23,971	25,970	27,972	29,868	31,559	33,249	34,938	36,628	38,318	39,998	49,347	50,549	51,654	52,754	0

TABLE 8.-

Tariffs and Rates																		
Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																		
Tariff per Patient																		
In-patients																		
Medical	116	122	128	134	141	148	155	163	171	180	189	198	279	293	308	323	339	0
Tubercul.	117	123	129	135	142	149	157	165	173	182	191	200	282	296	310	326	342	0
Surgery	116	122	128	134	141	148	155	163	171	180	189	198	279	293	308	323	339	0
Maternity	128	134	141	148	156	163	172	180	189	199	208	219	308	323	340	357	374	0
Pediatrics	120	126	132	139	146	153	161	169	177	186	195	205	289	303	318	334	351	0
Out-patients																		
Medical	70	74	77	81	85	89	94	98	103	109	114	120	168	177	186	195	205	0
Tubercul.	71	75	78	82	86	91	95	100	105	110	116	121	171	179	188	198	208	0
Surgery	70	74	77	81	85	89	94	98	103	109	114	120	168	177	186	195	205	0
Maternity	76	80	84	88	92	97	102	107	112	118	124	130	183	192	202	212	222	0
Pediatrics	72	76	79	83	88	92	96	101	106	112	117	123	173	182	191	201	211	0
CURRENT SITUATION ("Without Project")																		
Tariff per Patient																		
In-patients																		
Medical	116	122	128	134	141	148	155	163	171	180	189	198	279	293	308	323	339	0
Tubercul.	117	123	129	135	142	149	157	165	173	182	191	200	282	296	310	326	342	0
Surgery	116	122	128	134	141	148	155	163	171	180	189	198	279	293	308	323	339	0
Maternity	128	134	141	148	156	163	172	180	189	199	208	219	308	323	340	357	374	0
Pediatrics	120	126	132	139	146	153	161	169	177	186	195	205	289	303	318	334	351	0
Out-patients																		
Medical	70	74	77	81	85	89	94	98	103	109	114	120	168	177	186	195	205	0
Tubercul.	71	75	78	82	86	91	95	100	105	110	116	121	171	179	188	198	208	0
Surgery	70	74	77	81	85	89	94	98	103	109	114	120	168	177	186	195	205	0
Maternity	76	80	84	88	92	97	102	107	112	118	124	130	183	192	202	212	222	0
Pediatrics	72	76	79	83	88	92	96	101	106	112	117	123	173	182	191	201	211	0

TABLE 9.-

Revenues from Tariffs and Rates																			
	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
In-patient																			
Medical		963,235	1,142,589	1,515,250	1,724,260	1,846,683	1,977,797	2,118,221	2,268,614	2,429,686	2,602,194	2,786,949	2,984,823	4,824,417	5,092,775	5,347,414	5,614,784	5,895,524	0
Tubercul.		971,539	1,059,519	1,175,625	1,337,788	1,432,771	1,534,498	1,643,447	1,760,132	1,885,101	2,018,943	2,162,288	2,315,811	3,494,339	3,669,056	3,852,509	4,045,134	4,247,391	0
Surgery		972,126	1,217,010	1,771,877	2,016,058	2,159,198	2,312,501	2,459,654	2,582,647	2,711,779	2,847,368	2,989,737	3,139,224	4,417,203	4,638,063	4,869,986	5,113,464	5,369,138	0
Maternity		1,880,480	2,196,740	2,266,387	2,528,438	2,654,860	2,787,603	2,926,983	3,073,332	3,226,999	3,388,349	3,557,766	3,735,655	5,256,441	5,519,264	5,795,227	6,084,988	6,389,237	0
Pediatrics		757,302	895,770	1,181,654	1,344,649	1,440,119	1,542,367	1,651,875	1,769,158	1,894,768	2,029,297	2,173,377	2,327,687	3,762,278	4,029,399	4,315,487	4,621,886	4,950,400	0
Total Revenue In-patient		5,544,682	6,511,629	7,910,594	8,951,193	9,533,631	10,154,766	10,800,190	11,453,884	12,148,334	12,866,151	13,670,118	14,503,697	21,754,678	22,948,557	24,180,602	25,480,257	26,851,330	0
Out-patient																			
Medical		426,060	515,004	688,324	737,195	789,536	845,593	905,630	969,930	1,038,795	1,112,549	1,191,540	1,276,140	2,062,645	2,209,093	2,365,938	2,533,920	2,713,828	0
Tubercul.		308,676	373,115	498,684	534,090	572,011	612,623	656,120	702,704	752,596	806,031	863,259	924,550	1,494,365	1,600,465	1,714,098	1,835,799	1,966,141	0
Surgery		388,019	469,022	626,867	671,374	719,442	770,094	824,770	883,329	946,045	1,013,214	1,085,153	1,162,198	1,878,480	2,011,852	2,154,694	2,307,677	2,471,522	0
Maternity		454,320	549,162	733,978	786,061	841,903	901,678	961,697	1,034,263	1,108,341	1,186,341	1,270,571	1,360,781	2,355,814	2,522,663	2,701,986	2,893,827	3,093,827	0
Pediatrics		391,280	472,963	632,134	677,016	725,084	776,565	831,701	890,752	953,995	1,021,729	1,094,272	1,171,965	1,894,266	2,028,759	2,172,800	2,327,069	2,492,291	0
Total Revenue Out-patient		1,968,356	2,379,266	3,179,987	3,405,766	3,647,575	3,906,553	4,183,918	4,480,976	4,799,126	5,139,864	5,504,794	5,895,634	9,529,209	10,205,782	10,930,393	11,706,451	12,537,609	0
Total Revenue		7,513,038	8,890,895	11,090,581	12,356,959	13,181,206	14,061,319	14,984,108	15,934,860	16,947,460	18,026,015	19,174,912	20,398,333	31,283,887	33,154,339	35,110,995	37,186,708	39,388,939	0
CURRENT SITUATION ("Without Project")																			
In-patient																			
Medical		770,588	849,573	932,492	1,019,505	1,049,070	1,079,493	1,110,799	1,143,012	1,176,159	1,210,268	1,245,366	1,281,481	1,565,380	1,610,776	1,657,489	1,705,556	1,755,017	0
Tubercul.		1,046,273	1,153,515	1,266,099	1,384,241	1,424,384	1,465,692	1,508,197	1,551,934	1,596,940	1,643,252	1,690,906	1,739,942	2,125,409	2,187,045	2,250,470	2,315,733	2,382,890	0
Surgery		592,760	653,518	717,301	784,234	806,977	830,380	854,461	879,240	904,738	930,975	957,974	985,755	1,204,139	1,239,059	1,274,991	1,311,966	1,350,013	0
Maternity		1,602,496	1,766,752	1,939,187	2,120,137	2,181,621	2,244,888	2,309,990	2,376,980	2,445,912	2,516,844	2,589,832	2,664,937	3,255,327	3,349,731	3,446,693	3,548,633	3,649,691	0
Pediatrics		613,200	678,053	742,038	811,277	834,804	859,013	883,925	909,559	935,936	963,078	991,007	1,019,746	1,245,661	1,281,785	1,318,957	1,356,206	1,396,565	0
Total Revenue In-patient		4,625,317	5,099,411	5,597,114	6,119,395	6,296,857	6,479,466	6,667,371	6,860,724	7,059,685	7,264,416	7,475,084	7,691,862	9,395,915	9,668,397	9,948,780	10,237,295	10,534,176	0
Out-patient																			

Medical	252,034	277,868	304,988	333,447	343,117	353,067	363,306	373,842	384,683	395,839	407,319	419,131 ¹	511,985	526,832	542,111	557,832	574,009	
Tubercul.	182,596	201,312	220,960	241,579	248,585	255,794	263,212	270,845	278,699	286,781	295,098	303,656 ¹	370,928	381,685	392,754	404,143	415,864	
Surgery	229,531	253,058	277,757	303,675	312,481	321,543	330,868	340,463	350,337	360,496	370,951	381,708	466,272	479,794	493,708	508,025	522,758	
Maternity	268,751	296,298	325,216	355,563	365,874	376,485	387,403	398,638	410,198	422,094	434,335	446,930	545,943	561,775	578,067	594,831	612,081	
Pediatrics	231,460	255,185	280,091	303,648	315,107	324,245	333,648	343,324	353,281	363,526	374,068	384,916	470,190	483,826	497,857	512,295	527,151	
Total Revenue Out-patient	1,164,372	1,283,721	1,409,012	1,540,490	1,585,164	1,631,134	1,678,437	1,727,112	1,777,198	1,828,737	1,881,770	1,936,341	2,366,318	2,433,912	2,504,496	2,577,126	2,651,863	
Total Revenue	5,789,689	6,383,132	7,006,126	7,659,885	7,882,021	8,110,600	8,345,807	8,587,836	8,836,883	9,093,153	9,356,854	9,628,203	11,761,233	12,102,309	12,453,276	12,814,421	13,186,039	0

TABLE 10.- Operating Expenses																			
	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
Medicines and Supplies		2,251,389	2,511,636	3,038,159	3,253,869	3,484,893	3,732,321	3,997,316	4,281,125	4,585,085	4,910,626	5,259,280	5,632,689	9,104,206	9,750,605	10,442,898	11,184,344	11,978,432	0
Minor Equipment		420,727	474,400	584,959	626,491	670,972	718,611	769,632	824,276	882,800	945,478	1,012,607	1,084,502	1,752,899	1,877,354	2,010,647	2,153,403	2,306,294	0
Administrative Expenses		628,456	701,102	848,077	908,290	972,779	1,041,846	1,115,817	1,195,040	1,279,888	1,370,760	1,468,084	1,572,318	2,541,362	2,721,799	2,915,047	3,122,015	3,343,678	
Services: Tel, Water, Electricity		524,901	585,577	708,333	758,625	812,487	870,174	931,956	998,125	1,068,992	1,144,891	1,226,178	1,313,236	2,122,605	2,273,310	2,434,715	2,607,580	2,792,718	0
Total Purchases		3,825,474	4,272,716	5,179,528	5,547,275	5,941,131	6,362,952	6,814,721	7,298,566	7,816,765	8,371,755	8,966,149	9,602,746	15,521,073	16,623,069	17,803,307	19,067,342	20,421,123	0
CURRENT SITUATION ("Without Project")																			
Medicines and Supplies		1,854,085	1,907,854	2,044,129	2,146,335	2,253,652	2,366,335	2,484,651	2,608,884	2,739,328	2,876,295	3,020,109	3,171,115	4,462,077	4,685,181	4,919,440	5,165,412	5,423,682	0
Minor Equipment		331,482	341,095	350,987	361,165	371,639	382,416	393,507	404,918	416,661	428,744	441,178	453,972	554,545	570,626	587,175	604,203	621,724	0
Administrative Expenses		517,552	532,561	548,006	563,898	580,251	597,078	614,393	632,211	650,545	669,411	688,823	708,799	865,827	890,936	916,773	943,359	970,717	
Services: Tel, Water, Electricity		432,272	444,808	457,707	470,981	484,639	498,693	513,156	528,037	543,350	559,107	575,321	592,006	723,159	744,130	765,710	787,916	810,765	0
Total Purchases		3,135,391	3,226,317	3,400,828	3,542,379	3,690,181	3,844,523	4,005,707	4,174,050	4,349,884	4,533,556	4,725,432	4,925,892	6,605,607	6,890,873	7,189,097	7,500,889	7,826,888	0

TABLE 11 - Working Capital																			
	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
Accounts Receivable		1,126,956	1,333,634	1,663,587	1,853,544	1,977,181	2,109,198	2,247,616	2,390,229	2,542,119	2,703,902	2,876,237	3,059,825	4,692,583	4,973,151	5,266,649	5,578,006	5,908,341	0
Accounts Receivable Not Paid		450,782	533,454	665,435	741,418	790,872	843,679	899,046	956,092	1,016,848	1,081,561	1,150,495	1,223,930	1,877,033	1,989,260	2,106,660	2,231,202	2,363,336	
Change in Accounts Receivable		0	-124,007	-197,972	-113,974	-74,182	-79,210	-83,051	-85,568	-91,134	-97,070	-103,401	-110,153	-164,521	-168,341	-176,099	-186,814	-198,201	3,545,004
Accounts Payable		573,821	640,907	776,929	832,091	891,170	954,443	1,022,208	1,094,785	1,172,515	1,255,763	1,344,922	1,440,412	2,328,161	2,493,460	2,670,496	2,860,101	3,063,168	
Change in Accounts Payable		0	-67,086	-136,022	-55,162	-59,078	-63,273	-67,765	-72,577	-77,730	-83,249	-89,159	-95,489	-154,341	-165,299	-177,036	-189,605	-203,067	3,063,168
Cash Balance		751,304	889,090	1,109,058	1,235,696	1,318,121	1,406,132	1,498,411	1,593,486	1,694,746	1,802,602	1,917,491	2,039,883	3,128,389	3,315,434	3,511,099	3,718,671	3,938,894	
Change in Cash Balance		0	137,786	219,969	126,638	82,425	88,011	92,279	95,075	101,260	107,856	114,890	122,392	182,801	187,045	195,666	207,571	220,223	-3,938,894
CURRENT SITUATION ("Without Project")																			
Accounts Receivable		868,453	957,470	1,050,919	1,148,983	1,182,303	1,216,590	1,251,871	1,288,175	1,325,532	1,363,973	1,403,528	1,444,230	1,764,185	1,815,346	1,867,991	1,922,163	1,977,906	0
Accounts Receivable Not Paid		347,381	382,988	420,368	459,593	472,921	486,636	500,748	515,270	530,213	545,589	561,411	577,692	705,674	726,139	747,197	768,865	791,162	
Change in Accounts Receivable		0	-53,410	-56,069	-58,838	-19,992	-20,572	-21,169	-21,783	-22,414	-23,064	-23,733	-24,421	-29,832	-30,697	-31,587	-32,503	-33,446	1,186,744
Accounts Payable		470,309	483,948	510,124	531,357	553,527	576,678	600,856	626,107	652,483	680,033	708,815	738,884	990,841	1,033,631	1,078,365	1,125,133	1,174,033	
Change in Accounts Payable		0	-13,639	-26,177	-21,233	-22,170	-23,151	-24,178	-25,251	-26,375	-27,551	-28,781	-30,069	-40,934	-42,790	-44,734	-46,769	-48,900	1,174,033
Cash Balance		578,969	638,313	700,613	765,988	158,516	163,113	167,844	172,711	177,720	182,874	188,177	193,634	236,532	243,391	250,450	257,713	265,186	
Change in Cash Balance		0	59,344	62,299	65,376	-607,472	4,597	4,730	4,867	5,009	5,154	5,303	5,457	6,666	6,859	7,058	7,263	7,474	-265,186

TABLE 12.-																			
Labor Costs																			
	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
REVITALIZED HOSPITAL ("With Project")																			
Number of Employees																			
Skilled/Semiskilled		303	314	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	0
Unskilled		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	0
Salaries																			
Skilled/Semiskilled																			
Real Salary/month		6,437	6,501	6,566	6,632	6,698	6,765	6,833	6,901	6,970	7,040	7,110	7,182	7,700	7,777	7,854	7,933	8,012	0
Nominal Salary/month		6,437	6,826	7,239	7,677	8,142	8,634	9,157	9,711	10,298	10,921	11,582	12,283	18,530	19,651	20,840	22,101	23,438	0
Total Salaries per year		23,366,310	25,726,116	29,623,780	31,416,019	33,316,688	35,332,348	37,469,955	39,736,887	42,140,969	44,690,498	47,394,273	50,261,626	75,824,795	80,412,195	85,277,133	90,436,400	95,907,802	0
Unskilled																			
Real Salary/month		1,453	1,460	1,468	1,475	1,482	1,490	1,497	1,505	1,512	1,520	1,527	1,535	1,589	1,597	1,605	1,613	1,622	0
Nominal Salary/month		1,453	1,533	1,618	1,707	1,802	1,901	2,006	2,117	2,234	2,358	2,488	2,625	4,037	4,260	4,495	4,743	4,973	0
Total Salaries per year		1,220,520	1,287,954	1,359,113	1,434,204	1,513,444	1,597,062	1,685,299	1,778,412	1,876,669	1,980,355	2,089,770	2,205,230	3,213,227	3,390,758	3,578,097	3,775,787	3,984,399	0
Allowances and Bonus																			
		6,024,656	6,624,722	7,609,812	8,069,135	8,556,189	9,072,646	9,620,284	10,200,984	10,816,743	11,469,678	12,162,034	12,896,191	19,438,183	20,611,662	21,855,998	23,175,468	24,574,610	0
Total Direct Labor Cost		30,611,486	33,638,792	38,592,706	40,919,359	43,386,321	46,002,056	48,775,538	51,716,283	54,834,381	58,140,531	61,646,076	65,363,047	98,476,205	104,414,615	110,711,228	117,387,654	124,466,811	0
Professional & Special Services																			
		956,943	1,080,149	1,384,727	1,453,963	1,526,661	1,602,994	1,683,144	1,767,301	1,855,666	1,948,449	2,045,872	2,149,301	2,878,747	3,022,684	3,173,819	3,332,509	3,499,135	0
TOTAL LABOR COSTS		31,568,429	34,718,941	39,911,493	42,304,085	44,840,284	47,528,717	50,378,532	53,399,427	56,601,682	59,996,197	63,594,526	67,408,919	101,354,952	107,437,300	113,885,046	120,720,164	127,965,946	0
CURRENT SITUATION ("Without Project")																			
Number of Employees																			
Skilled/Semiskilled		264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	0
Unskilled		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	0
Salaries																			
Skilled/Semiskilled																			
Real Salary/month		6,437	6,501	6,566	6,632	6,698	6,765	6,833	6,901	6,970	7,040	7,110	7,182	7,700	7,777	7,854	7,933	8,012	0
Nominal Salary/month		6,437	6,826	7,239	7,677	8,142	8,634	9,157	9,711	10,298	10,921	11,582	12,283	18,530	19,651	20,840	22,101	23,438	0
Total Salaries per year		20,392,416	21,626,157	22,934,540	24,322,079	25,793,565	27,354,076	29,008,997	30,764,042	32,625,266	34,599,095	36,692,340	38,912,227	58,703,067	62,254,603	66,021,006	70,015,277	74,251,201	0
Unskilled																			
Real Salary/month		1,453	1,460	1,468	1,475	1,482	1,490	1,497	1,505	1,512	1,520	1,527	1,535	1,589	1,597	1,605	1,613	1,622	0
Nominal Salary/month		1,453	1,533	1,618	1,707	1,802	1,901	2,006	2,117	2,234	2,358	2,488	2,625	4,037	4,260	4,495	4,743	4,973	0
Total Salaries per year		1,220,520	1,287,954	1,359,113	1,434,204	1,513,444	1,597,062	1,685,299	1,778,412	1,876,669	1,980,355	2,089,770	2,205,230	3,213,227	3,390,758	3,578,097	3,775,787	3,984,399	0

Allowances and Bonus	5,281,182	5,599,732	5,937,502	6,295,650	6,675,408	7,078,078	7,505,044	7,957,772	8,437,817	8,946,827	9,486,551	10,058,841	15,157,751	16,072,264	17,041,966	18,070,187	19,160,460	0
Total Direct Labor Cost	26,894,118	28,513,843	30,231,155	32,051,934	33,982,417	36,029,216	38,199,341	40,500,226	42,939,753	45,526,277	48,268,661	51,176,298	77,074,045	81,717,625	86,641,069	91,861,251	97,396,061	0
Professional & Special Services	717,707	753,593	791,272	830,836	872,378	915,997	961,796	1,009,886	1,060,381	1,113,400	1,169,070	1,227,523	1,727,248	1,813,611	1,904,291	1,999,506	2,099,481	0
TOTAL LABOR COSTS	27,611,825	29,267,436	31,022,427	32,882,770	34,854,795	36,945,212	39,161,137	41,510,112	44,000,133	46,639,677	49,437,730	52,403,821	78,801,293	83,531,235	88,545,361	93,860,757	99,495,542	0

TABLE 13:-
CASH FLOW STATEMENT: REVITALIZED HOSPITAL ("With Project")
Nominal Values (Rand)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																		
In-patient	5,544,682	6,511,629	7,910,594	8,951,193	9,533,631	10,154,766	10,800,190	11,453,884	12,148,334	12,886,151	13,670,118	14,503,199	21,754,678	22,948,557	24,180,602	25,480,257	26,851,330	-
Out-patients	1,968,356	2,379,266	3,179,987	3,405,766	3,647,575	3,906,553	4,183,918	4,480,976	4,799,126	5,139,864	5,504,794	5,895,634	9,529,209	10,205,762	10,930,393	11,706,451	12,537,609	-
Total Revenue	7,513,038	8,890,895	11,090,581	12,356,959	13,181,206	14,061,319	14,984,108	15,934,860	16,947,460	18,026,015	19,174,912	20,398,833	31,283,887	33,154,339	35,110,995	37,186,708	39,388,939	-
Change in Accounts Receivable	-	(124,007)	(197,972)	(113,974)	(74,182)	(79,210)	(83,051)	(85,568)	(91,134)	(97,070)	(103,401)	(110,153)	(164,521)	(168,341)	(176,099)	(186,814)	(198,201)	3,545,004
Liquidation Values																		-
Land																		-
Building																		147,125,581
Equipment																		-
TOTAL CASH INFLOW	7,513,038	8,766,888	10,892,609	12,242,985	13,107,023	13,982,109	14,901,057	15,849,293	16,856,326	17,928,945	19,071,511	20,288,680	31,119,366	32,985,998	34,934,896	36,999,894	39,190,738	150,670,586
EXPENDITURES																		
INVESTMENT COST																		
Land and Decommissioning Costs	1,000,000	-	-	-	-	-	-	-	-	-	-	-						-
Building	12,700,000	37,978,068	84,380,920	-	-	-	-	-	-	-	-	-						-
Equipment	950,000	5,409,600	3,993,806	-	-	-	-	-	-	-	-	-						-
Total Investment Cost	14,650,000	43,387,668	88,374,726	-	-	-	-	-	-	-	-	-						-
OPERATING COST																		
Skilled/Semiskilled	23,366,310	25,726,116	29,623,780	31,416,019	33,316,688	35,332,348	37,469,955	39,736,887	42,140,969	44,690,498	47,394,273	50,261,626	75,824,795	80,412,195	85,277,133	90,436,400	95,907,802	-
Unskilled	1,220,520	1,287,954	1,359,113	1,434,204	1,513,444	1,597,062	1,685,299	1,778,412	1,876,669	1,980,355	2,089,770	2,205,230	3,213,227	3,390,758	3,578,097	3,775,787	3,984,399	-
Allowances and Bonus	6,024,656	6,624,722	7,609,812	8,089,135	8,556,189	9,072,646	9,620,284	10,200,984	10,816,743	11,469,678	12,162,034	12,896,191	19,438,183	20,811,662	21,855,998	23,175,468	24,574,610	-
Professional & Special Services	958,943	1,080,149	1,318,787	1,384,727	1,453,963	1,602,994	1,602,994	1,683,144	1,767,301	1,855,666	1,948,449	2,045,872	2,878,747	3,022,684	3,173,819	3,332,509	3,498,135	-
Medicines and Supplies	2,251,389	2,511,636	3,038,159	3,484,893	3,732,321	3,997,316	4,281,125	4,585,058	4,910,626	5,259,280	5,632,689	6,034,206	9,104,206	9,750,605	10,442,898	11,184,344	11,978,432	-
Minor Equipment	420,727	474,400	584,959	626,491	670,972	718,611	769,632	824,276	882,800	945,478	1,012,607	1,084,502	1,752,899	1,877,354	2,010,647	2,153,403	2,306,294	-
Administrative Expenses and Services	1,153,358	1,286,679	1,556,410	1,666,915	1,785,266	1,912,020	2,047,773	2,193,165	2,348,880	2,515,650	2,694,262	2,885,554	4,663,968	4,995,109	5,349,927	5,729,595	6,136,397	-
Total Operating Cost	35,393,902	38,991,657	45,091,021	47,851,360	50,781,415	53,891,668	57,193,253	60,697,993	64,418,446	68,367,951	72,560,675	77,011,665	116,876,025	124,060,369	131,688,353	139,787,506	148,387,069	-
Working Capital																		
Change in Accounts Payable	-	(67,086)	(136,022)	(55,162)	(59,078)	(63,273)	(67,765)	(72,577)	(77,730)	(83,249)	(89,159)	(95,489)	(154,341)	(165,299)	(177,036)	(189,605)	(203,067)	3,063,168
Change in Cash Balance	-	137,786	219,969	126,638	82,425	88,011	92,279	95,075	101,260	107,856	114,890	122,392	182,801	187,045	195,666	207,571	220,223	(3,938,894)
Accounts Receivable Not Paid	450,782	533,454	665,435	741,418	790,872	843,679	899,046	956,092	1,016,848	1,081,561	1,150,495	1,223,930	1,877,033	1,989,260	2,106,660	2,231,202	2,363,336	-
TOTAL OUTFLOW	50,494,684	82,983,479	134,215,129	48,664,253	51,595,634	54,760,086	58,116,813	61,676,583	65,458,824	69,474,119	73,736,900	78,262,497	118,781,517	126,071,375	133,813,643	142,036,674	150,767,561	(875,725)
NET CASH FLOW	(42,981,646)	(74,216,591)	(123,322,520)	(36,421,269)	(38,488,610)	(40,777,977)	(43,215,756)	(45,827,291)	(48,602,498)	(51,545,174)	(54,665,389)	(57,973,817)	(87,662,151)	(93,085,376)	(98,878,747)	(105,036,780)	(111,576,823)	151,546,311

TABLE 14:-
CASH FLOW STATEMENT: CURRENT SITUATION ("Without Project")
Nominal Values (Rand)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
In-patient		4,625,317	5,099,411	5,597,114	6,119,395	6,296,857	6,479,466	6,667,371	6,860,724	7,059,685	7,264,416	7,475,084	7,691,862	9,395,915	9,668,397	9,948,780	10,237,295	10,534,176	-
Out-patients		1,164,372	1,283,721	1,409,012	1,540,490	1,585,164	1,631,134	1,678,437	1,727,112	1,777,198	1,828,737	1,881,770	1,936,341	2,365,318	2,433,912	2,504,496	2,577,126	2,651,863	-
Total Revenue		5,789,689	6,383,132	7,006,126	7,659,885	7,882,021	8,110,600	8,345,807	8,587,836	8,836,883	9,093,153	9,356,854	9,628,203	11,761,233	12,102,309	12,453,276	12,814,421	13,186,039	-
Change in Accounts Receivable		-	(53,410)	(56,069)	(58,838)	(19,992)	(20,572)	(21,169)	(21,783)	(22,414)	(23,064)	(23,733)	(24,421)	(29,832)	(30,697)	(31,587)	(32,503)	(33,446)	1,186,744
Liquidation Values																			-
Land																			3,071,524
Building																			-
Equipment																			-
TOTAL CASH INFLOW		5,789,689	6,329,722	6,950,056	7,601,046	7,862,029	8,090,028	8,324,639	8,566,053	8,814,469	9,070,088	9,333,121	9,603,782	11,731,401	12,071,612	12,421,689	12,781,918	13,152,593	4,258,267
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land		1,000,000																	-
Building		12,700,000																	-
Equipment		950,000																	-
Total Investment Cost		14,650,000																	-
OPERATING COST																			
Skilled/Semiskilled		20,392,416	21,626,157	22,934,540	24,322,079	25,793,565	27,354,076	29,008,997	30,764,042	32,625,266	34,599,095	36,692,340	38,912,227	58,703,067	62,254,603	66,021,006	70,015,277	74,251,201	-
Unskilled		1,220,520	1,287,954	1,359,113	1,434,204	1,513,444	1,597,062	1,685,299	1,778,412	1,876,669	1,980,355	2,089,770	2,205,230	3,213,227	3,390,758	3,578,097	3,775,787	3,984,399	-
Allowances and Bonus		5,281,182	5,599,732	5,937,502	6,295,650	6,675,408	7,078,078	7,505,044	7,957,772	8,437,817	8,946,827	9,486,551	10,058,841	15,157,751	16,072,264	17,041,966	18,070,187	19,160,460	-
Professional & Special Services		717,707	753,593	791,272	830,836	872,378	915,997	961,796	1,009,886	1,060,381	1,113,400	1,169,070	1,227,523	1,727,248	1,813,611	1,904,291	1,999,506	2,099,481	-
Medicines and Supplies		1,854,085	1,907,854	2,044,129	2,146,335	2,253,652	2,366,335	2,484,651	2,608,884	2,739,328	2,876,295	3,020,109	3,171,115	4,462,077	4,685,181	4,919,440	5,165,512	5,423,682	-
Minor Equipment		331,482	341,095	350,987	361,165	371,639	382,416	393,507	404,918	416,661	428,744	441,178	453,972	554,545	570,626	587,175	604,203	621,724	-
Administrative Expenses and Services		949,824	977,369	1,005,713	1,034,878	1,064,880	1,095,771	1,127,549	1,160,248	1,193,895	1,228,518	1,264,145	1,300,805	1,588,985	1,635,066	1,682,483	1,731,275	1,781,482	-
Total Operating Cost		30,747,216	32,493,753	34,423,255	36,425,148	38,544,975	40,789,735	43,166,844	45,684,162	48,350,017	51,173,233	54,163,162	57,329,712	85,406,900	90,422,108	95,734,457	101,361,646	107,322,430	-
Working Capital																			
Change in Accounts Payable		-	(13,639)	(26,177)	(21,233)	(22,170)	(23,151)	(24,178)	(25,251)	(26,375)	(27,551)	(28,781)	(30,069)	(40,934)	(42,790)	(44,734)	(46,769)	(48,900)	1,174,033
Change in Cash Balance		59,344	62,299	65,376	68,376	(607,472)	4,597	4,730	5,154	5,009	5,154	5,303	5,457	6,686	6,859	7,058	7,263	7,474	(265,186)
Accounts Receivable Not Paid		347,381	382,988	420,368	459,593	472,921	468,636	500,748	515,270	530,213	545,598	561,411	577,692	705,674	726,139	747,197	768,865	791,162	-
TOTAL CASH FLOW		47,374,597	32,922,442	34,879,745	36,928,885	38,388,254	41,257,817	43,648,145	46,179,048	48,858,864	51,696,426	54,701,095	57,882,793	86,078,306	91,112,316	96,443,197	102,091,005	108,072,686	908,847
NET CASH FLOW		(39,954,909)	(26,592,724)	(27,929,689)	(29,327,838)	(30,626,225)	(33,167,789)	(35,323,506)	(37,612,995)	(40,044,395)	(42,626,337)	(45,367,974)	(48,279,011)	(74,346,905)	(79,040,704)	(84,022,290)	(89,309,088)	(94,919,573)	3,349,420

EXPENDITURES																	
INVESTMENT COST (Opportunity Costs)																	
Land and Decommissioning Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building	-	37,978,068	84,380,920	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	-	5,409,600	3,993,806	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Investment Cost	-	43,387,668	88,374,726	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPERATING COST																	
Skilled/Semiskilled	2,973,894	4,099,959	6,689,241	7,093,940	7,523,123	7,978,272	8,460,958	8,972,846	9,515,703	10,091,403	10,701,933	11,349,399	17,121,728	18,157,592	19,256,127	20,421,122	21,656,600
Unskilled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allowances and Bonus	743,474	1,024,990	1,672,310	1,773,485	1,880,781	1,994,568	2,115,239	2,243,211	2,378,926	2,522,851	2,675,483	2,837,350	4,280,432	4,539,398	4,814,032	5,105,281	5,414,150
Professional & Special Services	239,236	326,557	527,515	553,891	581,585	610,664	641,198	673,257	706,920	742,266	779,380	818,349	1,151,499	1,209,074	1,269,527	1,333,004	1,399,654
Medicines and Supplies	397,304	603,783	994,031	1,107,534	1,231,241	1,365,986	1,512,664	1,672,241	1,845,757	2,034,331	2,239,171	2,461,575	4,642,130	5,065,424	5,523,458	6,018,932	6,554,750
Minor Equipment	89,245	133,305	233,972	265,326	299,333	336,194	376,126	419,358	466,139	516,734	571,430	630,531	1,198,354	1,306,728	1,423,472	1,549,200	1,684,570
Administrative Expenses and Services	203,534	309,310	550,697	632,037	720,376	816,248	920,225	1,032,918	1,154,985	1,287,133	1,430,117	1,584,749	3,074,983	3,360,044	3,667,280	3,996,321	4,354,915
Total Operating Cost	4,646,686	6,497,904	10,667,766	11,426,212	12,366,440	13,101,934	14,026,409	15,013,831	16,068,429	17,194,718	18,397,513	19,681,952	31,469,125	33,638,261	35,953,696	38,425,660	41,064,639
Working Capital																	
Change in Accounts Payable	-	(53,447)	(109,845)	(33,929)	(36,908)	(40,122)	(43,588)	(47,325)	(51,355)	(55,698)	(60,378)	(65,421)	(113,408)	(122,509)	(132,302)	(142,836)	(154,167)
Change in Cash Balance	-	78,441	157,669	61,262	689,897	83,414	87,549	90,208	96,251	102,702	109,586	116,935	176,135	180,186	188,607	200,308	212,749
Accounts Receivable Not Paid	103,401	150,466	245,067	281,824	317,951	357,043	396,298	440,821	486,635	535,972	589,083	646,238	1,171,359	1,263,122	1,359,463	1,462,337	1,572,174
TOTAL OUTFLOW	4,750,087	50,061,032	99,335,384	11,735,368	13,207,379	13,502,269	14,468,668	15,497,535	16,599,961	17,777,694	19,035,805	20,379,705	32,703,211	34,959,059	37,369,664	39,945,669	42,695,395
NET CASH FLOW	(3,026,738)	(47,623,866)	(95,392,831)	(7,093,430)	(7,962,385)	(7,610,188)	(7,892,249)	(8,214,295)	(8,558,104)	(8,918,837)	(9,297,415)	(9,694,806)	(13,315,247)	(14,044,672)	(14,856,457)	(15,727,693)	(16,657,251)

TABLE 16:-
INCREMENTAL CASH FLOW STATEMENT: (REVITALIZED HOSPITAL "With Project" - CURRENT SITUATION "Without Project")
Real Values (Rand of 2004)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
Inletent	919,366	1,344,969	2,098,395	2,446,214	2,662,901	2,879,694	3,083,974	3,264,273	3,444,198	3,623,821	3,803,213	3,982,448	3,982,448	5,135,321	5,255,410	5,363,824	5,471,345	5,578,017	-
Out-patients	803,983	1,043,377	1,606,327	1,611,295	1,696,750	1,782,850	1,869,629	1,957,120	2,045,360	2,134,382	2,224,222	2,314,917	2,314,917	2,976,745	3,075,593	3,175,632	3,276,901	3,379,441	-
Total Revenue	1,723,349	2,388,346	3,704,721	4,057,509	4,359,652	4,662,544	4,953,602	5,221,393	5,489,558	5,758,203	6,027,436	6,297,364	6,297,364	8,112,066	8,331,003	8,539,456	8,748,246	8,957,458	-
Change in Accounts Receivable	-	(67,235)	(128,710)	(47,628)	(44,582)	(45,945)	(46,178)	(45,331)	(46,512)	(47,705)	(48,909)	(50,125)	(50,125)	(55,966)	(54,470)	(54,465)	(55,389)	(56,322)	767,782
Liquidation Values	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1,000,000)
Building	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47,899,868
Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CASH INFLOW	1,723,349	2,321,110	3,576,012	4,009,881	4,315,070	4,616,600	4,907,425	5,176,062	5,443,045	5,710,498	5,978,527	6,247,239	6,247,239	8,056,100	8,276,533	8,484,991	8,692,858	8,901,136	47,667,650
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land and Decommissioning Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building	-	36,169,589	76,535,962	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	-	5,152,000	3,622,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Investment Cost	-	41,321,589	80,158,462	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPERATING COST																			
Skilled/Semiskilled	2,973,894	3,904,723	6,067,339	6,128,012	6,189,292	6,251,185	6,313,697	6,376,834	6,440,602	6,505,008	6,570,058	6,635,759	6,635,759	7,114,432	7,185,576	7,257,432	7,330,006	7,403,306	-
Unskilled	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allowances and Bonus	743,474	976,181	1,516,835	1,532,003	1,547,323	1,562,796	1,578,424	1,594,208	1,610,151	1,626,252	1,642,515	1,658,940	1,658,940	1,778,608	1,796,394	1,814,358	1,832,501	1,850,827	-
Professional & Special Services	239,236	311,006	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	478,472	-
Medicines and Supplies	397,304	575,031	901,615	956,729	1,012,945	1,070,286	1,128,773	1,188,431	1,249,281	1,311,348	1,374,657	1,439,232	1,439,232	1,928,901	2,004,560	2,081,733	2,160,450	2,240,740	-
Minor Equipment	89,245	126,958	212,220	229,198	246,262	263,417	280,671	298,030	315,501	333,092	350,808	368,658	368,658	497,941	517,117	536,492	556,074	575,870	-
Administrative Expenses and Services	203,534	294,581	499,499	545,977	592,655	639,652	686,686	734,075	781,730	829,697	877,968	926,570	926,570	1,277,719	1,329,683	1,382,159	1,435,167	1,488,727	-
Total Operating Cost	4,646,686	6,188,480	9,675,978	9,870,391	10,066,949	10,265,708	10,466,722	10,670,049	10,875,745	11,083,869	11,294,477	11,507,630	11,507,630	13,076,071	13,311,802	13,550,645	13,792,669	14,037,942	-
Working Capital																			
Change in Accounts Payable	-	(50,902)	(99,633)	(29,309)	(30,364)	(31,436)	(32,526)	(33,633)	(34,759)	(35,903)	(37,067)	(38,250)	(38,250)	(47,123)	(48,481)	(49,863)	(51,270)	(52,702)	615,048
Change in Cash Balance	-	74,706	143,011	52,920	567,580	65,357	65,357	64,109	65,147	66,202	67,277	68,369	68,369	73,188	71,306	71,064	71,899	72,726	(1,196,054)
Accounts Receivable Not Paid	103,401	143,301	222,283	243,451	261,579	278,753	297,216	313,284	329,373	345,492	361,646	377,842	377,842	486,724	499,860	512,367	524,895	537,447	-
TOTAL OUTFLOW	4,750,087	47,677,174	90,100,121	10,137,453	10,865,744	10,579,381	10,796,743	11,013,809	11,235,507	11,459,660	11,686,333	11,915,591	11,915,591	13,588,860	13,834,487	14,084,233	14,338,193	14,595,415	(581,006)
NET CASH FLOW	(3,026,738)	(45,356,063)	(86,524,110)	(6,127,572)	(6,550,674)	(5,962,782)	(5,889,318)	(5,837,746)	(5,792,461)	(5,749,162)	(5,707,806)	(5,668,352)	(5,668,352)	(5,532,760)	(5,557,954)	(5,599,242)	(5,645,335)	(5,694,279)	48,248,655

TABLE 17:-
FINANCIAL RESULTS:
JANE FURSE HOSPITAL REVITALIZATION PROJECT
All figures in Present Values (Year 0 values)

	Inflows (Rand)	Outflows (Rand)	NPV (Rand)	Patient Days (#)	Funding Per Patient Day (Rand)	Total Costs Per Pat. Day (Rand)
	1	2	3	4	5	6
A. REVITALIZED HOSPITAL ("With Project")	99,794,413	501,848,807	-402,054,394	631,537	637	795
B. CURRENT SITUATION ("Without Project")	53,153,762	308,941,751	-255,787,989	374,346	683	825
C. INCREMENTAL ANALYSIS (C = A - B)	46,640,651	192,907,057	-146,266,406	257,191	-47	-31

TABLE 18:-
YEARLY FINANCIAL RESULTS
JANE FURSE HOSPITAL REVITALIZATION PROJECT
All figures in Nominal Rand (5% annual inflation rate)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026
A. REVITALIZED HOSPITAL ("With Project")																	
Number of Patient-days	50,018	56,088	65,709	72,495	71,563	72,653	73,655	74,471	75,303	76,151	77,016	77,899	83,708	84,223	84,654	85,094	85,542
Projected Revenues from Fees and Tariffs	7,513,038	8,766,888	10,892,609	12,242,985	13,107,023	13,982,109	14,901,057	15,849,293	16,856,326	17,928,945	19,071,511	20,288,680	31,119,366	32,985,998	34,934,896	36,999,894	39,190,738
Projected Investment Costs	-	43,387,668	88,374,726	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Projected Recurrent Expenses	35,844,684	39,595,810	45,840,403	48,664,253	51,595,634	54,760,086	58,116,813	61,676,583	65,458,824	69,474,119	73,736,900	78,262,497	118,781,517	126,071,375	133,813,643	142,036,674	150,767,561
B. CURRENT SITUATION ("Without Project")																	
Number of Patient-days	40,708	42,743	44,681	46,524	45,593	44,681	43,788	42,912	42,054	41,213	40,389	39,581	34,361	33,674	33,000	32,340	31,694
Projected Revenues from Fees and Tariffs	5,783,669	6,325,722	6,950,056	7,602,039	7,865,025	8,096,025	8,324,468	8,560,653	8,800,639	9,047,085	9,303,121	9,603,702	11,751,401	12,071,812	12,405,650	12,789,401	13,152,555
Projected Recurrent Expenses	31,094,597	32,922,446	34,879,745	36,928,985	38,385,254	41,257,817	43,648,145	46,179,048	48,858,864	51,696,426	54,701,095	57,882,793	86,078,306	91,112,316	96,443,979	102,091,005	108,072,166
C. INCREMENTAL ANALYSIS (C = A - B)																	
Number of Patient-days	9,310	13,345	21,028	23,971	25,970	27,972	29,868	31,559	33,249	34,938	36,628	38,318	49,347	50,549	51,654	52,754	53,849
Projected Revenues from Fees and Tariffs	1,723,349	2,437,166	3,942,553	4,631,938	5,244,994	5,892,081	6,576,418	7,283,329	8,041,857	8,858,857	9,736,390	10,684,898	19,387,965	20,914,386	22,513,207	24,217,976	26,038,144
Projected Investment Costs	-	43,387,668	88,374,726	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Projected Recurrent Expenses	4,750,087	6,673,364	10,960,657	11,735,368	13,207,379	13,502,269	14,468,668	15,497,535	16,599,961	17,777,694	19,035,805	20,379,705	32,703,211	34,959,059	37,369,664	39,945,669	42,695,395

A. REVITALIZED HOSPITAL ("With Project")	28,331,646	74,216,591	123,322,520	36,421,269	38,488,610	40,777,977	43,215,756	45,827,291	48,602,498	51,545,174	54,665,389	57,973,817	87,662,151	93,085,376	98,878,747	105,036,780	111,576,823
B. CURRENT SITUATION ("Without Project")	25,304,909	26,592,724	27,929,689	29,327,638	30,526,226	33,167,789	35,323,509	37,612,995	40,044,395	42,626,337	45,367,974	48,279,011	74,346,905	79,940,704	84,022,290	89,309,088	94,919,573
C. INCREMENTAL ANALYSIS (C = A - B)	3,026,738	47,623,866	95,392,831	7,093,430	7,962,385	7,610,188	7,892,249	8,214,295	8,558,104	8,918,637	9,297,415	9,694,806	13,315,247	14,044,672	14,856,457	15,727,693	16,657,251

TABLE 19.-
YEARLY FINANCIAL RESULTS
JANE FURSE HOSPITAL REVITALIZATION PROJECT
All figures in Real Rand (Year 0)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	
A. REVITALIZED HOSPITAL ("With Project")	Number of Patient-days	50,018	56,088	65,709	70,495	71,563	72,653	73,655	74,471	75,303	76,151	77,016	77,899	83,708	84,223	84,654	85,094	85,542	
	Projected Revenues from Fees and Tariffs	7,513,038	8,349,417	9,879,918	10,575,951	10,783,181	10,955,348	11,119,398	11,263,796	11,409,025	11,557,158	11,708,254	11,862,371	12,930,739	13,053,680	13,166,595	13,280,829	13,397,349	
	Projected Investment Costs	-	41,321,589	80,158,482	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Projected Recurrent Expenses	35,844,684	37,710,295	41,578,596	42,038,012	42,447,855	42,905,960	43,367,661	43,832,396	44,305,109	44,783,637	45,268,060	45,758,461	49,356,174	49,890,724	50,432,955	50,982,980	51,539,871	
	B. CURRENT SITUATION ("Without Project")	Number of Patient-days	40,708	42,743	44,681	46,524	45,593	44,681	43,788	42,912	42,054	41,213	40,389	39,581	34,361	33,674	33,000	32,340	31,694
	Projected Revenues from Fees and Tariffs	5,789,689	6,028,307	6,303,906	6,566,070	6,468,111	6,338,749	6,211,974	6,087,734	5,965,979	5,846,660	5,729,727	5,615,132	4,874,640	4,777,147	4,681,604	4,587,972	4,496,212	
	Projected Recurrent Expenses	31,094,597	31,354,711	31,636,957	31,900,559	31,582,112	32,326,579	32,570,918	32,818,588	33,069,602	33,323,977	33,581,727	33,842,870	35,767,314	36,056,237	36,344,787	36,644,787	36,944,456	
C. INCREMENTAL ANALYSIS (C = A - B)	Number of Patient-days	9,310	13,345	21,028	23,971	25,970	27,972	29,868	31,559	33,249	34,938	36,628	38,318	49,347	50,549	51,654	52,754	53,849	
	Projected Revenues from Fees and Tariffs	1,723,349	2,321,110	3,576,012	4,009,881	4,315,070	4,616,600	4,907,425	5,176,062	5,443,045	5,710,498	5,978,527	6,247,239	8,056,100	8,276,533	8,484,991	8,692,858	8,901,136	
	Projected Investment Costs	-	41,321,589	80,158,482	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Projected Recurrent Expenses	4,760,087	6,355,585	9,941,639	10,137,453	10,865,744	10,579,381	10,796,743	11,013,809	11,235,507	11,459,660	11,686,333	11,915,591	13,588,860	13,834,487	14,084,233	14,338,193	14,595,415	
	D. PROJECTED BUDGETARY SUPPORT REQUIREMENTS																		
A. REVITALIZED HOSPITAL ("With Project")		28,331,646	70,682,467	111,857,161	31,462,061	31,664,675	31,950,612	32,248,262	32,568,600	32,896,084	33,226,479	33,559,807	33,896,090	36,425,435	36,837,044	37,266,360	37,702,150	38,142,523	
B. CURRENT SITUATION ("Without Project")		25,304,909	25,326,404	25,333,051	25,334,489	25,114,001	25,987,830	26,358,944	26,730,853	27,103,623	27,477,317	27,852,001	28,227,738	30,892,675	31,279,091	31,667,117	32,056,815	32,448,244	
C. INCREMENTAL ANALYSIS (C = A - B)		3,026,738	45,356,063	86,524,110	6,127,572	6,560,674	5,962,782	5,889,318	5,837,746	5,792,461	5,749,162	5,707,806	5,668,352	5,532,760	5,557,954	5,599,242	5,645,335	5,694,279	

ECONOMIC ANALYSIS

TABLE 20.-
Quality Adjusted Life Years (QALY)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
REVITALIZED HOSPITAL ("With Project")																		
Infectious and Parasitic Diseases	7,393	8,684	11,857	12,545	12,730	12,919	13,093	13,237	13,383	13,532	13,684	13,839	14,997	15,148	15,293	15,441	15,592	
Endocrine, Nutritional and Metabolic Diseases	1,264	1,484	2,027	2,144	2,176	2,208	2,238	2,263	2,288	2,313	2,339	2,366	2,563	2,589	2,614	2,639	2,665	
Diseases of the Blood and Blood-Forming Organs	1,505	1,768	2,414	2,554	2,592	2,631	2,666	2,695	2,725	2,755	2,786	2,818	3,054	3,084	3,114	3,144	3,175	
Diseases of the Nervous System and Sense Organs	1,781	2,092	2,856	3,022	3,066	3,112	3,154	3,188	3,223	3,259	3,296	3,333	3,612	3,649	3,684	3,719	3,756	
Diseases of the Circulatory and Respiratory System	836	1,341	1,862	1,419	1,410	1,466	1,561	1,498	1,462	1,531	1,548	1,574	1,697	1,714	1,730	1,747	1,764	
Diseases of the Digestive System	2,758	3,239	4,423	4,680	4,749	4,819	4,884	4,938	4,982	5,048	5,105	5,162	5,594	5,651	5,705	5,760	5,816	
Diseases of the Genitourinary System	2,572	3,021	4,125	4,364	4,429	4,494	4,555	4,605	4,656	4,707	4,760	4,814	5,217	5,270	5,320	5,372	5,424	
Diseases of the Skin and Subcutaneous Tissue	2,307	2,711	3,701	3,916	3,973	4,032	4,087	4,132	4,177	4,224	4,271	4,320	4,681	4,728	4,773	4,820	4,867	
Diseases Musculoskeletal Syst. & Connective Tissue	831	976	1,333	1,411	1,431	1,453	1,471	1,488	1,505	1,521	1,539	1,556	1,686	1,703	1,719	1,736	1,753	
Injury and Poisoning	5,818	6,834	9,330	9,872	10,018	10,167	10,304	10,417	10,532	10,649	10,769	10,891	11,801	11,921	12,035	12,151	12,270	
Maternity	1,213	1,425	1,945	2,058	2,088	2,119	2,148	2,172	2,196	2,220	2,245	2,270	2,460	2,485	2,509	2,533	2,558	
TOTAL QALY	28,277	33,216	45,352	47,985	48,693	49,416	50,083	50,631	51,190	51,760	52,342	52,935	57,362	57,941	58,497	59,063	59,641	-
CURRENT SITUATION ("Without Project")																		
Infectious and Parasitic Diseases	6,057	6,360	6,648	6,923	6,784	6,648	6,515	6,385	6,257	6,132	6,010	5,889	5,113	5,011	4,910	4,812	4,716	
Endocrine, Nutritional and Metabolic Diseases	1,035	1,087	1,136	1,183	1,160	1,136	1,114	1,091	1,070	1,048	1,027	1,007	874	856	839	823	806	
Diseases of the Blood and Blood-Forming Organs	1,233	1,295	1,354	1,410	1,381	1,354	1,327	1,300	1,274	1,249	1,224	1,199	1,041	1,020	1,000	980	960	
Diseases of the Nervous System and Sense Organs	1,459	1,532	1,601	1,687	1,661	1,634	1,568	1,538	1,507	1,477	1,448	1,419	1,231	1,207	1,183	1,159	1,136	
Diseases of the Circulatory and Respiratory System	885	752	783	768	768	762	737	722	708	694	680	660	578	567	556	544	534	
Diseases of the Digestive System	2,260	2,372	2,582	2,531	2,480	2,430	2,382	2,334	2,288	2,242	2,197	2,197	1,907	1,869	1,832	1,795	1,759	
Diseases of the Genitourinary System	2,107	2,212	2,313	2,408	2,360	2,313	2,267	2,221	2,177	2,133	2,091	2,049	1,779	1,743	1,708	1,674	1,641	
Diseases of the Skin and Subcutaneous Tissue	1,891	1,985	2,075	2,161	2,118	2,075	2,034	1,993	1,953	1,914	1,876	1,838	1,596	1,564	1,533	1,502	1,472	
Diseases Musculoskeletal Syst. & Connective Tissue	681	715	748	778	763	748	733	718	704	689	676	662	575	563	552	541	530	
Injury and Poisoning	4,767	5,005	5,448	5,405	5,239	5,029	4,824	4,628	4,432	4,236	4,040	3,844	3,639	3,443	3,247	3,051	2,855	
Maternity	994	1,043	1,091	1,136	1,113	1,091	1,069	1,048	1,027	1,006	986	966	839	823	806	789	774	
TOTAL QALY	23,169	24,327	25,430	26,479	25,949	25,430	24,922	24,423	23,935	23,456	22,987	22,527	19,557	19,165	18,782	18,406	18,038	-
INCREMENTAL ANALYSIS (REVITALIZED HOSPITAL "With Project" - CURRENT SITUATION "Without Project")																		
TOTAL QALY	5,108	8,889	19,922	21,506	22,744	23,985	25,161	26,208	27,255	28,304	29,355	30,408	37,806	38,776	39,715	40,657	41,602	-

TABLE 21.-
CASH FLOW STATEMENT: REVITALIZED HOSPITAL ("With Project")
Economic Values (Real Rand)

[illegible]

Change in Accounts Payable	0.85	-	(54,091)	(104,451)	(40,342)	(41,148)	(41,971)	(42,811)	(43,667)	(44,540)	(45,431)	(46,340)	(47,267)	(54,204)	(55,380)	(56,498)	(57,618)	(58,770)	844,302
Change in Cash Balance	1	-	131,224	199,518	109,394	67,811	68,959	68,860	67,568	68,537	69,525	70,532	71,560	75,957	74,020	73,744	74,506	75,283	(1,282,391)
Accounts Receivable Not Paid	1	450,782	508,051	603,569	640,464	650,653	661,045	670,882	679,476	688,242	697,184	706,304	715,607	779,946	787,218	793,978	800,873	807,906	-
TOTAL OUTFLOW		45,772,665	70,955,012	108,434,064	38,431,732	36,801,930	39,219,903	39,640,979	40,064,589	40,495,671	40,932,054	41,373,812	41,821,019	45,100,965	45,587,825	46,081,768	46,582,898	47,090,280	(438,089)
NET CASH FLOW		(45,772,665)	(70,955,012)	(108,434,064)	(38,431,732)	(36,801,930)	(39,219,903)	(39,640,979)	(40,064,589)	(40,495,671)	(40,932,054)	(41,373,812)	(41,821,019)	(45,100,965)	(45,587,825)	(46,081,768)	(46,582,898)	(47,090,280)	42,398,373

TABLE 22.-
CASH FLOW STATEMENT: CURRENT SITUATION ("Without Project")
Economic Values (Real Rand)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
Liquidation Values																			
Land	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000,000
Building	0.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	0.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CASH INFLOW			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000,000
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land	1	1,000,000																	-
Building	0.88	11,125,200																	-
Equipment	0.93	882,550																	-
Total Investment Cost			13,007,750																
OPERATING COST																			
Skilled/Semiskilled	0.91	18,557,099	18,742,670	18,930,096	19,119,397	19,310,591	19,503,697	19,698,734	19,895,721	20,094,679	20,295,625	20,498,582	20,703,567	22,197,027	22,418,997	22,643,187	22,869,619	23,098,315	-
Unskilled	1	1,220,520	1,226,623	1,232,756	1,238,919	1,245,114	1,251,340	1,257,596	1,263,884	1,270,204	1,276,555	1,282,938	1,289,352	1,335,162	1,341,838	1,348,547	1,355,290	1,362,066	-
Allowances and Bonus	0.91	4,805,876	4,853,101	4,900,795	4,948,962	4,997,606	5,046,732	5,096,345	5,146,451	5,197,052	5,248,156	5,299,766	5,351,888	5,731,506	5,787,910	5,844,873	5,902,402	5,960,501	-
Professional & Special Services	0.93	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	666,750	-
Medicines and Supplies	0.93	1,722,445	1,687,996	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	1,722,445	-
Minor Equipment	0.93	307,947	301,788	295,752	289,837	284,040	278,359	272,792	267,336	261,990	256,750	251,615	246,582	214,065	209,783	205,588	201,476	197,446	-
Administrative Expenses and Services	0.85	804,126	788,043	772,282	756,837	741,700	726,866	712,329	698,082	684,120	670,438	657,029	643,889	558,976	547,797	536,841	526,104	515,582	-
Total Operating Cost			28,084,762	28,266,971	28,520,877	28,743,147	28,968,246	29,196,189	29,428,992	29,660,670	29,897,240	30,136,719	30,379,125	30,624,475	32,425,931	32,695,520	32,968,231	33,244,085	33,523,105
Working Capital																			
Change in Accounts Payable	0.85	-	(10,997)	(20,101)	(15,528)	(15,442)	(15,357)	(15,274)	(15,193)	(15,113)	(15,035)	(14,959)	(14,884)	(14,400)	(14,336)	(14,273)	(14,212)	(14,152)	323,599
Change in Cash Balance	1	-	56,518	56,507	56,474	(499,769)	3,602	3,530	3,459	3,390	3,322	3,256	3,191	2,770	2,715	2,660	2,607	2,555	(86,337)
Accounts Receivable Not Paid	1	347,381	364,750	381,286	397,014	389,074	381,292	373,666	366,193	358,869	351,692	344,658	337,765	293,222	287,358	281,611	275,978	270,459	-
TOTAL OUTFLOW			41,439,893	28,677,243	28,938,569	29,181,107	28,842,109	29,565,726	29,788,914	30,015,129	30,244,386	30,476,698	30,712,080	30,950,546	32,707,523	32,971,256	33,238,228	33,508,458	33,781,967
NET CASH FLOW			(41,439,893)	(28,677,243)	(28,938,569)	(29,181,107)	(28,842,109)	(29,565,726)	(29,788,914)	(30,015,129)	(30,244,386)	(30,476,698)	(30,712,080)	(30,950,546)	(32,707,523)	(32,971,256)	(33,238,228)	(33,508,458)	(33,781,967)

TABLE 23.-
INCREMENTAL CASH FLOW STATEMENT: (REVITALIZED HOSPITAL "With Project" - CURRENT SITUATION "Without Project")
Economic Values (Real Rand)

	Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2022	2023	2024	2025	2026	2027
RECEIPTS																			
Liquidation Values		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1,000,000)
Building	0.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41,960,284
Equipment	0.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CASH INFLOW																			
EXPENDITURES																			
INVESTMENT COST (Opportunity Costs)																			
Land and Decommissioning Costs	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building	0.88	-	31,684,560	67,045,520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	0.93	-	4,786,208	3,365,303	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Investment Cost		-	36,470,768	70,410,823	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40,960,284
OPERATING COST																			
Skilled/Semiskilled	0.91	2,706,244	3,553,298	5,521,278	5,576,491	5,632,256	5,688,578	5,745,464	5,802,919	5,860,948	5,919,557	5,978,753	6,038,541	6,474,133	6,538,874	6,604,263	6,670,305	6,737,009	-
Unskilled	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allowances and Bonus	0.91	676,561	888,324	1,380,320	1,394,123	1,408,064	1,422,145	1,436,366	1,450,730	1,465,237	1,479,889	1,494,688	1,509,635	1,618,533	1,634,719	1,651,066	1,667,576	1,684,252	-
Professional & Special Services	0.93	222,250	288,925	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	444,500	-
Medicines and Supplies	0.93	369,095	534,204	837,600	888,801	941,026	994,296	1,048,631	1,104,052	1,160,582	1,218,242	1,277,056	1,337,046	1,791,949	1,862,237	1,933,930	2,007,058	2,081,648	-
Minor Equipment	0.93	82,909	117,944	197,152	212,925	228,777	244,714	260,743	276,870	293,100	309,442	325,901	342,483	462,587	480,401	498,401	516,592	534,983	-
Administrative Expenses and Services	0.85	172,313	249,394	422,878	462,227	501,745	541,448	581,352	621,472	661,825	702,426	743,292	784,439	1,081,723	1,125,717	1,170,143	1,215,019	1,260,364	-
Total Operating Cost		4,229,371	5,632,089	8,803,728	8,979,067	9,156,368	9,335,681	9,517,055	9,700,542	9,886,192	10,074,057	10,264,190	10,456,644	11,873,425	12,086,447	12,302,303	12,521,051	12,742,756	-
Working Capital																			
Change in Accounts Payable	0.85	-	(43,094)	(84,350)	(24,814)	(25,707)	(26,614)	(27,537)	(28,474)	(29,427)	(30,396)	(31,381)	(32,383)	(39,895)	(41,044)	(42,214)	(43,405)	(44,618)	520,703
Change in Cash Balance	1	-	74,706	143,011	52,920	567,580	65,357	65,330	64,109	65,147	66,202	67,277	68,369	73,188	71,306	71,084	71,899	72,728	(1,196,054)
Accounts Receivable Not Paid	1	103,401	143,301	222,283	243,451	261,579	279,753	297,216	313,284	329,373	345,492	361,646	377,842	486,724	499,860	512,367	524,895	537,447	-
TOTAL OUTFLOW																			
		4,332,772	42,277,769	79,495,495	9,250,625	9,959,821	9,654,177	9,852,065	10,049,460	10,251,285	10,455,356	10,661,732	10,870,473	12,393,442	12,616,569	12,843,540	13,074,440	13,308,314	(675,351)
NET CASH FLOW																			
		(4,332,772)	(42,277,769)	(79,495,495)	(9,250,625)	(9,959,821)	(9,654,177)	(9,852,065)	(10,049,460)	(10,251,285)	(10,455,356)	(10,661,732)	(10,870,473)	(12,393,442)	(12,616,569)	(12,843,540)	(13,074,440)	(13,308,314)	41,635,635

TABLE 24.-
ECONOMIC RESULTS
JANE FURSE HOSPITAL REVITALIZATION PROJECT
All figures in Present Values (Year 0 values)

	Outflows (Rand)	Patient Days (#)	Cost Per Patient Day (Rand)	QALY'S (Life years)	Cost Per QALY (Rand)
	1	2	3	4	5
A. REVITALIZED HOSPITAL ("With Project")	454,858,248	631,537	720	420,407	1,082
B. CURRENT SITUATION ("Without Project")	282,124,698	374,346	754	213,058	1,324
C. INCREMENTAL ANALYSIS (C = A - B)	172,733,550	257,191	-33	207,349	-242