

Republic of Lebanon

# Health Planning for South Lebanon

A Study undertaken by Tibbalds Partnership Ltd  
financed by the European Economic Community

HEALTH PLANNING FOR SOUTH LEBANON

SIDON

31 October 1983

الجمهورية اللبنانية  
مكتب وزير الدولة لشؤون التنمية الإدارية  
مركز مشاريع ودراسات القطاع العام

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FOREWORD

"This report is financed by the European Economic Community from credits of the Technical and Financial Cooperation Programme, signed with the Republic of Lebanon, and established by Tibbalds Partnership Limited. It does not necessarily reflect the opinion of the Commission of the European Communities".

Tibbalds Partnership Limited wishes to record its sincere thanks to the Government of Lebanon for its considerable support and assistance to the team undertaking this work.

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## 1.0 INTRODUCTION

This report is submitted in accordance with the terms of a contract drawn up between the Government of Lebanon and Tibbalds Partnership Limited covering the content of studies to be carried out between July and October 1983.

It is one of three volumes of the final documentation of this study. It provides a functional brief and development control plan for the reconstruction of the public hospital in Sidon (destroyed by the Israeli invasion in 1982) and its further development as the regional hospital for South Lebanon.

The regional context for this development is presented in the volume "Health Planning for South Lebanon : Regional Hospital Plan".

## 2.0 THE ROLE OF THE REGIONAL HOSPITAL

Since the destruction of the Sidon General Hospital by the Israeli invasion of 1982, there has been no public hospital operating in the city. The relatively undamaged small north wing of the building is now able to operate an outpatient clinic service but no inpatient or support services are possible. In any event, it is clear that a new hospital is needed urgently to meet the demands of the city with a present population of some 200 000 and likely to rise to over 300 000 within ten years.

In response to the urgency of this need, there are now plans to provide a temporary "Emergency" hospital with the assistance of USAID.

Over and above this, however, our studies have shown the need for a regional system of health and hospital provision. Within this context, the new Sidon hospital should be constructed to perform the role of a regional hospital supporting the other hospitals and health services throughout the South.

The context for the development of the Sidon Regional Hospital is presented in our report "Health Planning for South Lebanon : Regional Hospital Plan". These proposals are made in the context of a major shift in the approach of the Ministry of Health which is intended to reverse the gradual deterioration in the quality and quantity of government health services through the years of the civil war.

While the Government accepts the importance of the private sector, which currently provides the majority of hospital beds in South Lebanon, and does not intend to supplant it, it does intend to ensure that all citizens receive appropriate health services irrespective of their ability to pay. Moreover, it intends to achieve this policy by strengthening its direct involvement in the provision of services so that patients have genuine freedom of choice between public and private services, as well as by controlling the standards of the private sector.

The Government is aware that in the past the management of public health services was inadequate. It has adopted the following remedial strategy:

- ... The introduction of legislative changes to establish a decentralised, semi-autonomous management structure for health services, of which the major element will be the Area Health Authorities (AHAs).
- ... Changing the mechanism for financing public health services so that, for example, public hospitals could offer services to paying patients.
- ... The establishment of training programmes for health-service personnel, throughout the country.

Within this changed context we have framed proposals for hospital services in South Lebanon, that include:

- ... The establishment of three AHAs comprising the seven qadas of South Lebanon as follows:

Sidon AHA	- Sidon and Jezzine
Nabatiyeh AHA	- Nabatiyeh, Marjayoun and Hasbaya
Tyre AHA	- Tyre and Bint Jbail

- ... The organisation of public hospital services to reflect this structure, in the form of community, area and regional hospitals, each providing a range of services appropriate to the size of population being served and to supporting primary health services.
- ... The determination of the scale of provision of public hospital services on the basis of meeting not less than 30% of the assessed need for total hospital services in areas where the private sector is strong, and up to 100% of the assessed need in areas where no private hospitals exist or are likely to be developed.

In the light of these proposals the role of the Sidon Regional Hospital may be specified as follows:

- ... To provide community level services, ie. medicine, surgery, paediatrics, obstetrics and gynaecology, to the population of the Sidon and Jezzine qadas (no community hospital being proposed for the Jezzine qada).
- ... To provide area level services, including orthopaedics and psychiatry, to the same population.
- ... To provide regional services, including ENT, ophthalmology, certain tertiary specialties and supporting services for South Lebanon as a whole.
- ... To provide these inpatient and outpatient services at a scale to meet 30% of the assessed total requirement.
- ... To provide such nursing and para-medical training programmes as are determined in due course as being appropriate for South Lebanon.
- ... To provide a resource for post-graduate medical training programmes.

The service role of the hospital can be specified in quantitative terms by reference to the distribution of beds by specialty. It is proposed that 250 beds should be provided to fulfill projected requirements in 1988, distributed as follows:

#### Community Beds

Medicine	33
Surgery	29
Paediatrics	41
Obstetrics	35
Gynaecology	17

#### Area Beds

Orthopaedics	21
Psychiatry	17

#### Regional Beds

ENT	12
Ophthalmology	10
Tertiary Specialties	35

So far as the teaching role is concerned, no further detail can be added at the moment, since the overall Government policy statements given above have yet to be translated into specific programmes. This uncertainty has influenced the way in which we have approached the planning of the hospital, particularly in relation to the development of the site as explained in Sections 4.0 and 5.0.



### 3.0 FUNCTIONAL BRIEF

#### 3.1 Introduction

This brief defines the service functions and accommodation required by the Sidon Regional Hospital, to replace all existing and planned temporary hospital facilities on the site, and to fulfill the requirements defined in our report "Health Planning for South Lebanon : Regional Hospital Plan".

The brief lists the departments to be provided and where applicable gives the functional content of each department in terms of the appropriate "functional unit". For example, inpatient units are described by reference to the number of beds provided and the surgical suite is described in terms of the number of operating theatres, these being the recognised functional units for these departments. These measures of functional content have been used to assess floorspace requirements on the basis of comparison both with current standards for hospitals of this type and with other existing or proposed hospital developments providing similar services.

The space requirements of many departments cannot be assessed on the basis of functional content, there being no universally recognised measure. In these cases departmental space requirements have been assessed in relation to the overall bed complement of the hospital.

Departments to be provided are listed below.

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#### LIST OF DEPARTMENTS : SIDON REGIONAL HOSPITAL

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##### OUTPATIENT ACCOMMODATION

Accident and Emergency  
Short-Stay Unit  
Specialist Referral Clinics  
Dialysis Unit  
Dental Unit

##### INPATIENT ACCOMMODATION

General Acute Care  
Paediatrics  
Obstetrics  
Psychiatry  
Special-Care Baby Unit  
Intensive Therapy Unit

##### DIAGNOSIS AND TREATMENT

Diagnostic Imaging  
Diagnostic Laboratories  
Surgical Suite  
Delivery Suite  
Rehabilitation

## MEDICAL SUPPORT

Medical Records  
Pharmacy  
Central Sterilising and Disinfecting

## GENERAL SUPPORT

Administration  
Catering  
General Supply and Disposal  
Maintenance and Groundskeeping  
Staff Changing  
Housekeeping

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### 3.2 Proposals for Content and Area

Assumptions necessary for the assessment of functional units and the projection of departmental areas are given below, department by department.

#### OUTPATIENT ACCOMMODATION

##### Accident and Emergency

Provision has been made for a 24-hour service for patients suffering physical and bacterial trauma, medical, surgical and psychiatric emergencies.

Functional Unit : 60 patients in a 3-hour peak period

##### Short-Stay Unit

Provision has been made for patients who require a period of observation, possibly overnight, prior to discharge or admission to inpatient accommodation; also for patients undergoing operative procedures or lengthy investigations which can be completed in a day. The accommodation provides facilities for reception, preparation and rest, arranged in a combination of single rooms, multi-bed rooms and sitting areas.

Functional Unit : 16 places

##### Specialist Referral Clinics

Provision has been made for patients referred to the hospital, both new and returning, for consultation and examination in the following specialties, on the basis of morning and afternoon sessions.

Medicine  
Surgery  
Paediatrics  
Obstetrics  
Gynaecology  
Orthopaedics  
Psychiatry  
ENT  
Ophthalmology

and some selected tertiary specialties that cannot be identified at this point.

Consulting/examination rooms are provided on the basis that some will be for the exclusive use of the physician concerned while others will be for shared use. Supporting work rooms include space for EEG and ECG examinations.

Functional Unit : 64 doctor-sessions per week

#### Dialysis Unit

Provision has been made for routine bi- or tri-weekly dialysis of patients suffering chronic renal failure only.

Functional Unit : 10 places

#### Dental Unit

Provision has been made for the treatment of inpatients and of outpatients suffering dental emergencies.

Functional Unit : 1 chair

#### INPATIENT ACCOMMODATION

##### General Acute Care

Nursing units will provide a combination of multi-bed rooms and single rooms in the approximate proportion of 20%, accommodation being arranged to allow the grouping of patients according to the degree of their dependency on nursing care.

Functional Unit : 151 beds

##### Paediatric, Obstetric and Psychiatric Care

Nursing units will be planned to reflect the same principles as those applied to the general acute nursing units but adjusted to accommodate the specific needs of each specialty both in terms of the mix of multi-bed and single-bed rooms, and in the provision of additional items of accommodation particular to the specialty.

Functional Unit : Paediatrics : 42 beds  
Obstetrics : 35 beds  
Psychiatry : 17 beds

#### Intensive Therapy Unit

Provision has been made for medical and surgical care, including coronary care and acute renal failure. Bed spaces will be provided in open areas with minimal provision for single-bed rooms. Access to the unit by visiting staff and patients' visitors will be controlled.

Functional Unit : 6 beds

#### Special-Care Baby Unit

Provision has been made for three levels of care: intensive care, high dependency and intermediate/low dependency; reflecting the regional role of this facility.

Functional Unit : 20 cots

#### DIAGNOSIS AND TREATMENT

##### Diagnostic Imaging

Provision includes diagnostic radiology and ultrasound. The centralised service is for inpatients and outpatients, an appropriate part of the accommodation being available for 24-hour service. Space allocation includes provision for the centralised holding of film records.

Functional Unit : 5 procedure rooms

##### Diagnostic Laboratories

Provision is made for haematology including blood bank facilities, biochemistry, microbiology and histopathology (including facilities for post-mortem examinations which need not be located ensuite with the rest of the department). The centralised service is for outpatients and inpatients and space is allowed for the examination of patients and for blood donation.

##### Surgical Suite

Provision has been made for a centralised operating-room service for inpatients and outpatients; a pre-anaesthetic holding and post-anaesthetic recovery area being integrated within the suite. All sterile supplies will be provided by a centralised source outside the suite, holding areas only being provided within the department.

Functional Unit : 5 operating rooms

## Delivery Suite

Provision allows for combined labour and delivery rooms and for emergency surgical procedures. Planned caesarian sections would be undertaken in the main surgical suite.

Functional Unit : 6 combined labour/delivery rooms  
(including 1 special room)

## Rehabilitation

Provision allows for physiotherapy services for outpatients and inpatients, the latter taking place mainly in the nursing units.

## MEDICAL SUPPORT

### Medical Records

Provision has been made for the centralising of all medical information services including inpatient admissions, outpatient appointments, medical records storage and medical secretarial services.

### Pharmacy

Provision has been made for the centralising of all pharmacy storage, manufacturing and dispensing functions, both for inpatients and outpatients. Space allocated allows the department to fulfill a regional role in terms of both storage and manufacturing.

### Central Sterilising and Disinfecting Unit

Provision has been made for centralised sterilising and disinfecting services for all departments, including instruments and other materials for the surgical suite.

## GENERAL SUPPORT

### Administration

Space provision includes an allowance for the administration of the Area Health Authority.

### Catering

Provision includes both the staff dining rooms, and the central kitchen which will store, prepare, cook and distribute food for inpatients and for staff.

Functional Unit : 450 midday meals  
(including 250 staff meals)

### General Supply and Disposal

Provision has been made for centralised receipt, storage and distribution of supplies and for the collection and disposal of waste materials.

### Maintenance and Groundskeeping

Provision has been made for the maintenance of equipment, buildings and landscaped areas of the site, the department undertaking a regional role in relation to equipment maintenance.

### Laundry

Provision based on single-shift working, for the hospital only.

Functional Unit : 45,000 pieces per week

### Staff Changing

The provision allows non-resident staff to change into uniforms on site.

### Housekeeping

Provision has been made for a centralised base for the administration and allied function of the housekeeping service.

The table below lists the departments to be provided, their functional units where appropriate and their departmental areas, which include allowances for circulation spaces within departments. The total departmental area provided, 19,400 square metres, is then augmented by an allowance equal to 25% of the departmental total, to cover interdepartmental circulation spaces, including lifts and stairs, and engineering plantrooms and distribution spaces. The resulting total gross area of the hospital is 24,250 square metres.

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### SIDON REGIONAL HOSPITAL - FUNCTIONAL CONTENT AND DEPARTMENTAL AREAS

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Service and Department	Functional Units	Departmental Area in sq m
OUTPATIENT ACCOMMODATION		
Accident and Emergency	60 patients per 3hr peak	700
Short-stay Unit	16 places	375
Specialist Referral Clinics	64 doctor-sessions per week	1,250

General Supply and Disposal	-	1,100
Maintenance and Groundskeeping	-	200
Laundry	45,000 pieces per week	875
Staff Changing	-	350
Housekeeping	-	75
TOTAL DEPARTMENTAL AREA		19,400
Interdepartmental communication and engineering plantrooms		4,850
TOTAL GROSS AREA		24,250
Gross area per bed		96.6
Departmental area per bed		77.3

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### 3.3 The USAID Emergency Hospital

Since the original Sidon hospital was destroyed by the Israeli invasion, the city has been without a public hospital.

USAID has agreed with the Government of Lebanon to provide a temporary "Emergency" hospital on part of the original hospital site. This project is described in detail in a report prepared by Oudens and Knoop<sup>1</sup> which presents not only the pre-fabricated hospital for Sidon but a second hospital proposed for Beirut.

The Sidon Emergency Hospital is to provide 110 beds, together with a normal range of diagnostic, treatment, medical and general support departments. Only outpatient accommodation is excluded from the project on the basis that it will remain, pro tem, in the undamaged part of the existing building. The total area to be provided is 4,950 square metres. This scheme compares with our proposals for a regional hospital to provide 250 beds, within a gross area of 24,250 square metres.

(1) Report to Agency for International Development NE/TECH/HPN; Program Data Summary, Prefabricated Hospital Procurement, Beirut and Sidon, Lebanon; 15 August 1983, Contract No NEB-0327-C-00-3054-00

These differences in scale of provision and space standards emphasise the very different nature of the two proposals ie. the USAID hospital is meant to be a temporary expedient to the problem of a city without a hospital whilst our proposals are for a permanent city hospital with a vital regional role in supporting all health care services in South Lebanon.

The scale of provision proposed for the temporary hospital has been computed on the basis of the 1981 utilisation data for the then existing public hospital, augmented to allow for what is believed to have been an atypically low level of utilisation at that date reflecting the political situation in the area at that time. In other words, what is now proposed reflects what then existed, and this extends beyond the actual bed complement to the assessments of the workloads of individual departments on which space provision has been based.

This is a rational approach to the planning of a short-term emergency response. However, as Oudens and Knoop observe,

"Provision of these beds through a program based on rapid implementation to meet urgent medical service needs anticipates longer range planning for permanent facilities on these sites and does not preclude the selective rehabilitation of existing hospitals to meet further increments of total bed needs. A development plan should be prepared for each of these hospitals which determines demographic needs and evaluates renovation versus replacement of existing facilities to meet these needs".

The proposals of our report concur with these observations, and in doing so are based in the intention of the Ministry of Health to undertake a new and more active role in the provision of public hospital services, within a new regional, area and qada structure for public health services as a whole.

So far as space standards are concerned, as mentioned above the differences between the two projects are again related to a difference in roles rather than a difference of view as to what is appropriate. Space programmed for the temporary hospital is rudimentary, providing a total of only 45 square metres per bed. Oudens and Knoop compare this with more normal provision:

"The planning norms for US hospitals of similar size are 80-85 square metres per bed. The lesser areas provided in our programs as compared to US planning norms are attributable to:

- 1 Patient room occupancy and shared toilet and bathing facilities (current US hospital planning is based on one and two-bed rooms with private toilet and bathing facilities).
- 2 Minimum areas for administrative services due to the centralization of most administrative activities in the Ministry of Health (MOH planning objectives include the eventual decentralization of administrative functions but this reorganization is not anticipated within the lifespan of these facilities).



- 3 Project objectives, based on budget limitations and the temporary nature of these facilities, of providing building area and operational sophistication at minimal levels and only as essential to accommodate functional requirements".

Our proposals involve the provision of departmental space amounting to 77 square metres per bed, or 97 square metres per bed gross area, these figures including a number of regional functions not included in the US norms to which reference is made above.

#### 4.0 STRATEGY FOR DEVELOPMENT

The strategy described below is intended to respond to the requirements for space for service, education and staff residences in the context of the existing site, its buildings and the current plan for a temporary hospital.

Central to the development of our approach has been the recognition that while certain elements of the programme have been justified and detailed on the basis of present knowledge, others cannot be defined precisely until more is known of Government policy and population growth. In particular, whilst the needs for regional and local medical services have been established in our work and form the basis for the Functional Brief for the hospital (which covers only the service elements of the project), space for teaching, other than that included within service departments, cannot be defined in the absence of definition of specific teaching programmes. The same applies to residential requirements.

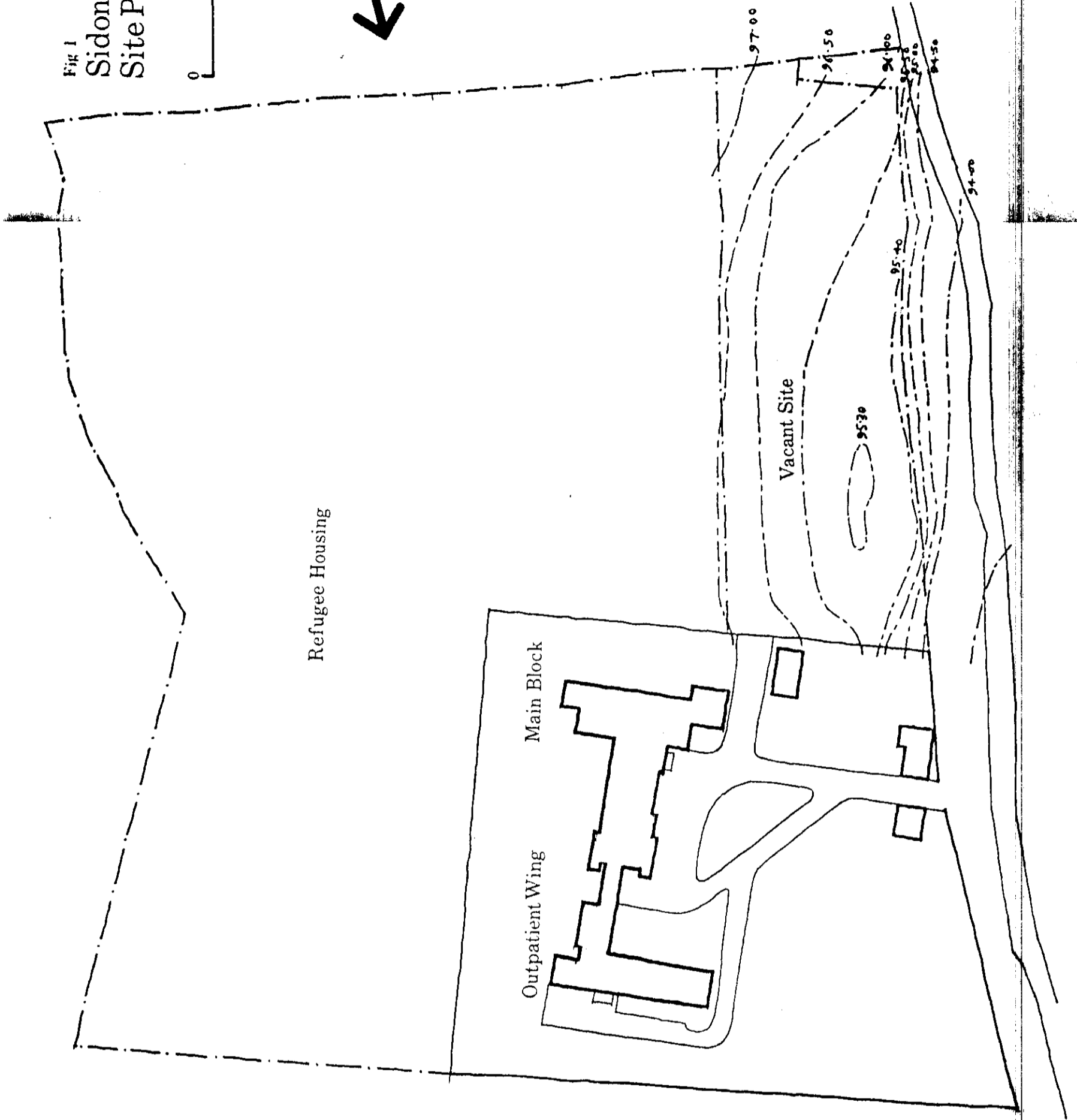
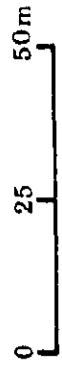
The total site area owned by the Government (see Figure 1) is extensive, amounting to about 60,000 square metres. However, the major part of this is occupied by refugee housing, the existing hospital grounds occupying a walled area in the north-western corner of the site. There is also a vacant strip of land, due south of the existing hospital. This area has already been allocated for the construction of the temporary prefabricated hospital. Therefore, sites for the construction of the permanent regional hospital are limited to the existing hospital grounds, and the refugee housing area. Both options involve problems.

Use of the land occupied by refugee housing is bound to involve substantial delays and probably additional costs as well, and in our view should be avoided for the first phase of development if serious attention is to be given to attaining the 1988 target for the provision of 250 beds. However, use of the present hospital grounds involves consideration of the damaged south wing. As shown in Appendix 2 to our report "Health Planning for South Lebanon: Regional Hospital Plan", the cost of repairing this wing is likely to be about LL9.0 million less than the cost of replacing it. However, retention of the existing building will sterilize large areas of the available site, leading to inefficient site development. This will prevent the development of the 250-bed hospital on the existing grounds alone - additional land would have to be made available, either from the refugee housing area, or from the vacant area currently allocated to the temporary hospital.

Either way, complications would ensue. We have therefore considered whether retention and re-use of the existing buildings could be achieved by integrating the facilities of the temporary hospital into the permanent redevelopment scheme so as to limit the amount of new construction required in the first instance, thereby enabling it to be sited within the existing grounds. In a sense this is a possibility envisaged by the authors of the temporary hospital programme who in discussing the need to extract the maximum possible life from the buildings they are providing observe:

"It is further likely that, as planning for permanent facilities on these sites does proceed, this planning will retain and integrate the capability provided by the temporary units for such period as the units are serviceable while including provisions for replacing this capability in further permanent construction when the useful life of the temporary units has been exhausted. The useful life of these units is thereby achieved but at the initial location rather than at alternative future sites. These

Fig 1  
Sidon  
Site Plan



considerations further suggest that relocatability may not be a determining factor in supplier prequalification".

While retention of the temporary buildings for some use is an attractive possibility, their use as clinical facilities within the permanent hospital is scarcely feasible. None of the temporary departments are large enough to support 250 beds (indeed, as highlighted by the authors of the temporary hospital plan, they are substandard even in relation to the 110 beds they are intended to support) and expansion, if possible at all, would only be possible by taking up some of the refugee housing land to the east, thereby defeating the object of the exercise.

We have therefore reached the following broad conclusions on which the development control plan is based.

- ... The service components of the 250-bed hospital should be located entirely in new permanent construction on the site of the existing hospital.
- ... In order to allow this development to be carried out efficiently and to produce an effective end result the existing hospital buildings should all be demolished, albeit in phases to allow continuity of service during construction.
- ... The prefabricated temporary hospital buildings should be located on the vacant site to the south of the existing hospital as proposed.
- ... These buildings should be re-used for teaching space and/or residential accommodation for staff, provided they are still in good condition at the time they become available.
- ... Any future additional accommodation, for example, for expansion of the hospital facilities or for staff residences, will of necessity be located on land presently occupied by refugee housing.

## 5.0 DEVELOPMENT PROPOSALS

### 5.1 Development Control Plan

Figure 2 shows the site plan proposed to respond to the conclusions given above. A major feature of this plan is the construction of a new north-south site road to give access to the central areas of the site and to create a new access route into the existing hospital site. While this road should form part of the long-term redevelopment of the site, it is not an essential feature in the first instance. The hospital development described below has been planned so that the existing access road on the west side of the site can continue to be used.

The development comprises three buildings, linked together and sited to take advantage of the east-west slope in the site and to ease sun shading problems. The inpatients' block is a six-storey, single-corridor, naturally ventilated building running east-west adjacent to the southern boundary of the existing hospital site. It is served by a lift tower which also links it to the central services block. This is a three-storey, deep-plan, mechanically ventilated and air-conditioned block which contains all the most highly serviced departments of the hospital together with the central engineering plant rooms. It is linked to the outpatients block by a three-storey lift tower. This is another three-storey, deep-plan block penetrated by courtyards to allow natural ventilation.

The lowest level of the latter blocks is allocated to various non-clinical service departments: central sterilising, catering and laundry beneath the upper levels of the central services block and stores, maintenance, staff changing, housekeeping below the outpatients. A service yard and service entrance are located to the west of these departments, on the lower side of the site.

On the east side of these buildings the rise in ground level allows external access to be provided to the next level up. The main entrance is located in the central services block and serves the other two blocks and their lift towers. A separate external access to the accident and emergency department is provided in the south face of the outpatients block. This segregation of entrances by level simplifies the segregation of service and patient traffic within the hospital and, in relating to site contours, determines the location of buildings and entrances on the site. These relationships are illustrated in Figure 3 which provides an axonometric projection of the hospital. The Figure also shows the location of staircases required as means of escape in case of fire. These are located at the extremities of the blocks and within the two lift towers mentioned above.

Car parking provision within the existing site will be limited. Approximately 30 cars can be accommodated adjacent the service yard, and another 35 at the main entrance level. This is unlikely to be sufficient, particularly during visiting hours, and will need to be augmented as further site development becomes possible.

Provision for expansion of individual departments is also limited, either in response to an increase in the bed complement or in the relation to presently unforeseen increases in workload unrelated to beds. Only the outpatient block can be provided with any significant amount of horizontal extension, towards the east. Therefore, consideration should be given in the detailed design

development of this scheme to the possibility of providing for a degree of vertical expansion in both the inpatient and outpatient blocks. (Such provision is unlikely to be feasible for the central services block due to the complexity of the mechanical and electrical services required here, including roof-top air conditioning plant).

The detailed disposition of departments and interdepartmental circulation space with the hospital is shown in the level-by-level plans, Figures 4 to 8.

## 5.2 Costs

This section provides estimates of the operating and capital costs of the proposed development, estimates which are also contained in our report "Health Planning in South Lebanon: Regional Hospital Plan".

### Operating Costs

Estimates of the staffing requirements of the hospital in 1988 and in 1993 have been prepared on an approximate basis in order to illustrate the broad budgetary implications of the plan. The basis of our assessments is explained in the Regional Hospital Plan mentioned above, and the results are given in the table below.

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#### SIDON REGIONAL HOSPITAL (250 beds)

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Staff Category	No.	Average Monthly Govt. Salary (LL)	Total Monthly Cost (LL)
Doctors	50	9000	450 000
Senior nurses	35	1950	68 250
Registered nurses	85	1750	148 750
Practical nurses	75	1450	108 750
Nurse aides	100	1100	110 000
Technicians & Drivers	100	1400	140 000
Administrators	15	2500	37 500
Clerks	65	1200	78 000
Others	170	1100	187 000
<b>Total</b>	<b>695</b>		<b>1 328 250</b>
Addition to compete with private sector - doctors			450 000
- others			175 650
<b>Total monthly salary cost</b>			<b>1 953 900</b>
<b>Total annual salary cost in 1988</b>			<b>23 446 800</b>

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Cost per bed per annum	93 787
Extra for 50 beds	4 689 360

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Total annual salary cost in 1993	28 136 160
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In assessing the total operating costs of the hospital it is assumed that non-salary costs - supplies, energy, bought-in-services - will amount to 50 percent of the salary bill. Total operating costs, in constant 1983 LL, will therefore be as follows:

1988 (250 beds)	LL35 170 200 per annum
1993 (300 beds)	LL42 204 300 per annum

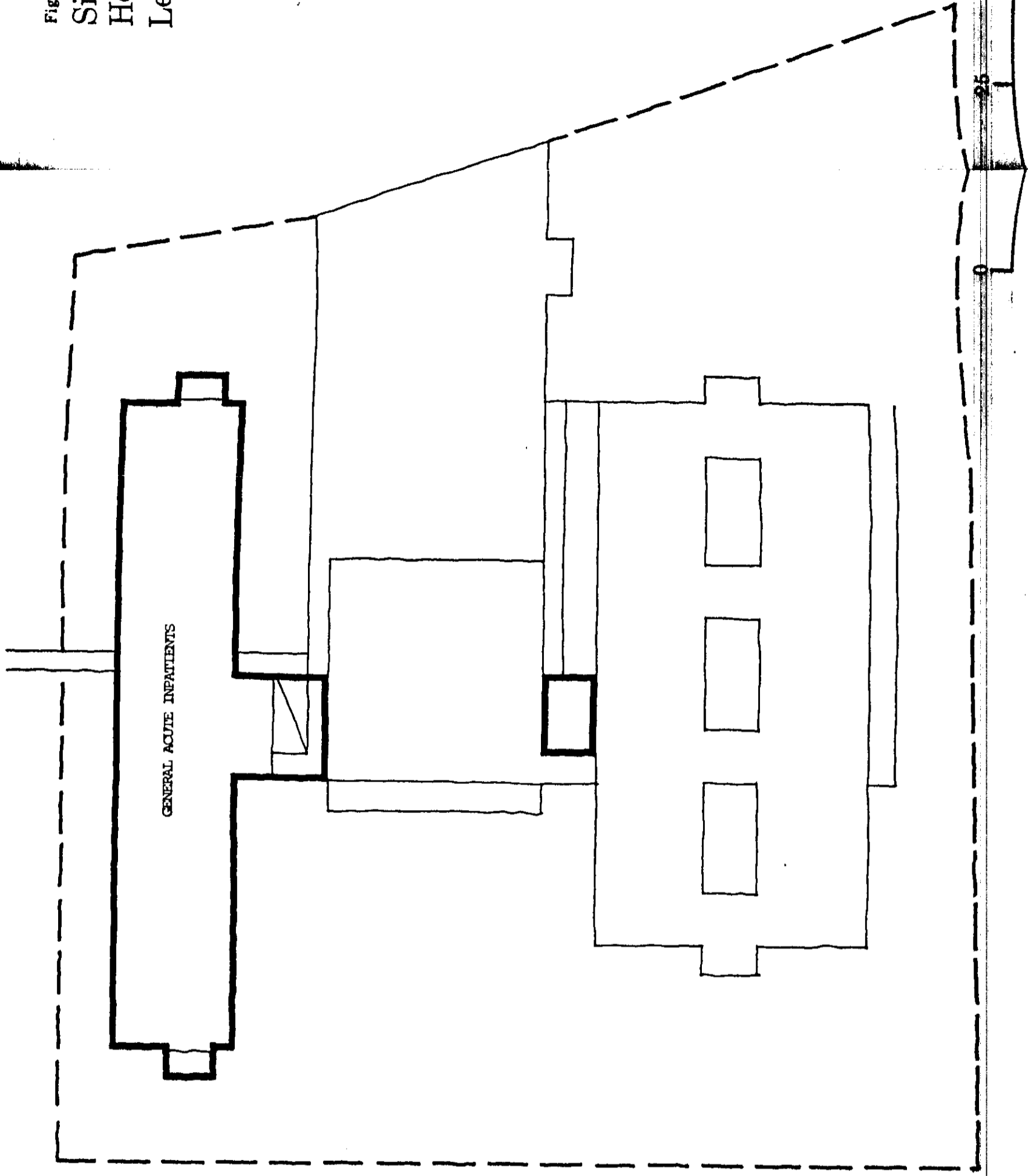
#### Capital Costs

The costs of construction have been assessed on the basis of the gross building area specified by the Functional Brief. The unit rate applied to these areas includes an allowance for professional fees and reflects the increased complexity of the regional hospital by comparison with the community hospital at Hasbaya. Equipment costs are as specified in the Regional Hospital Plan, which gives an explanation of the basis of which these costs were established. The results are given in the table below.

1988 Costs (250 beds)	LL
Building design and construction 24 250 sq m @ 4950 per sq m	120 037 500
Equipment	21 875 000
Total	141 912 500
1993 Costs (Additional 50 beds)	
Building design and construction: 3640 sq.m @ LL4950 per sq.m	18 018 000
Equipment	4 375 000
Total	22 393 000

Fig 8

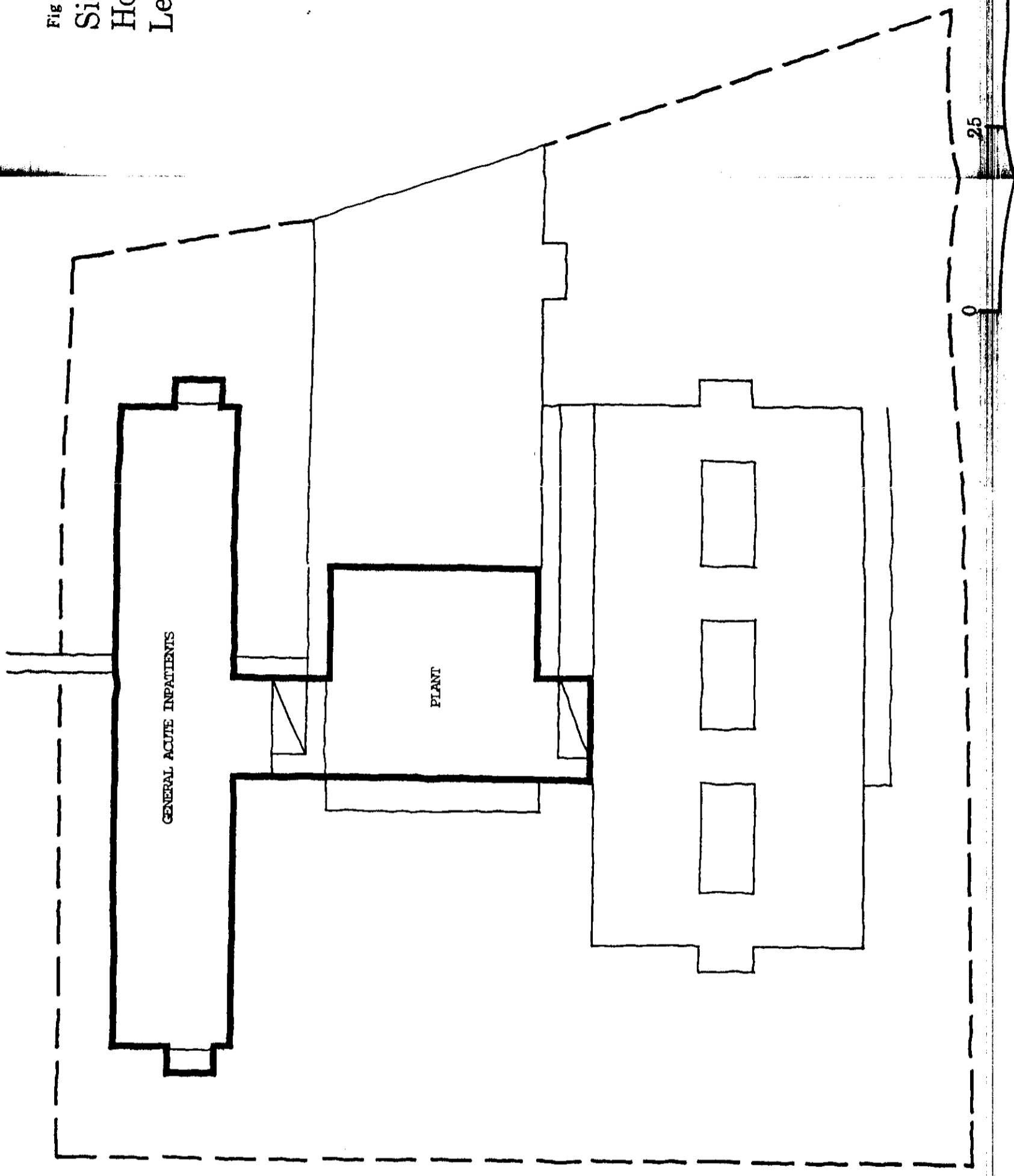
Sidon Regional  
Hospital  
Levels 5&6



50m



Fig 7  
Sidon Regional  
Hospital  
Level 4



50m

25

0

Fig 6  
Sidon Regional  
Hospital  
Level 3

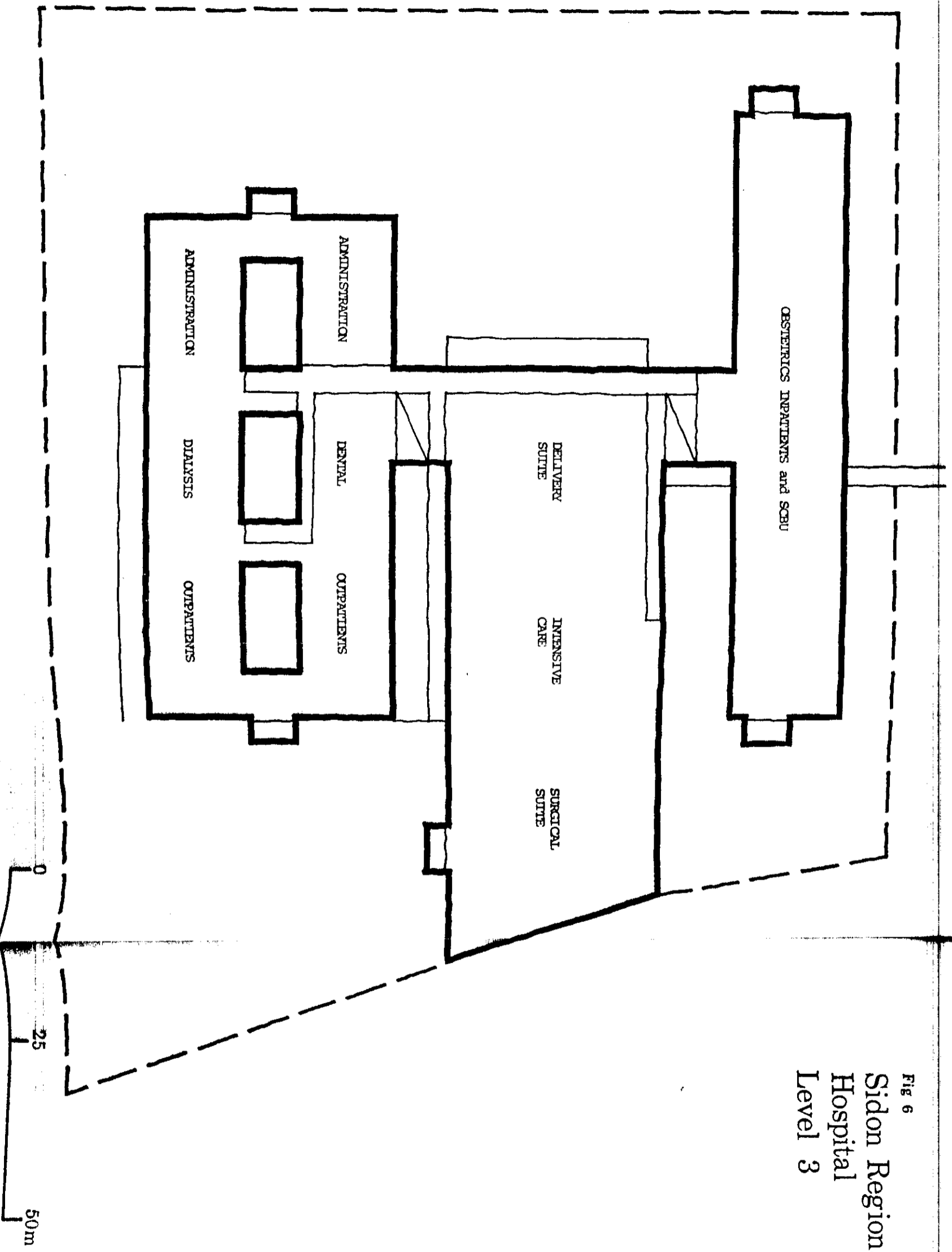


Fig 5  
Sidon Regional  
Hospital  
Level 2

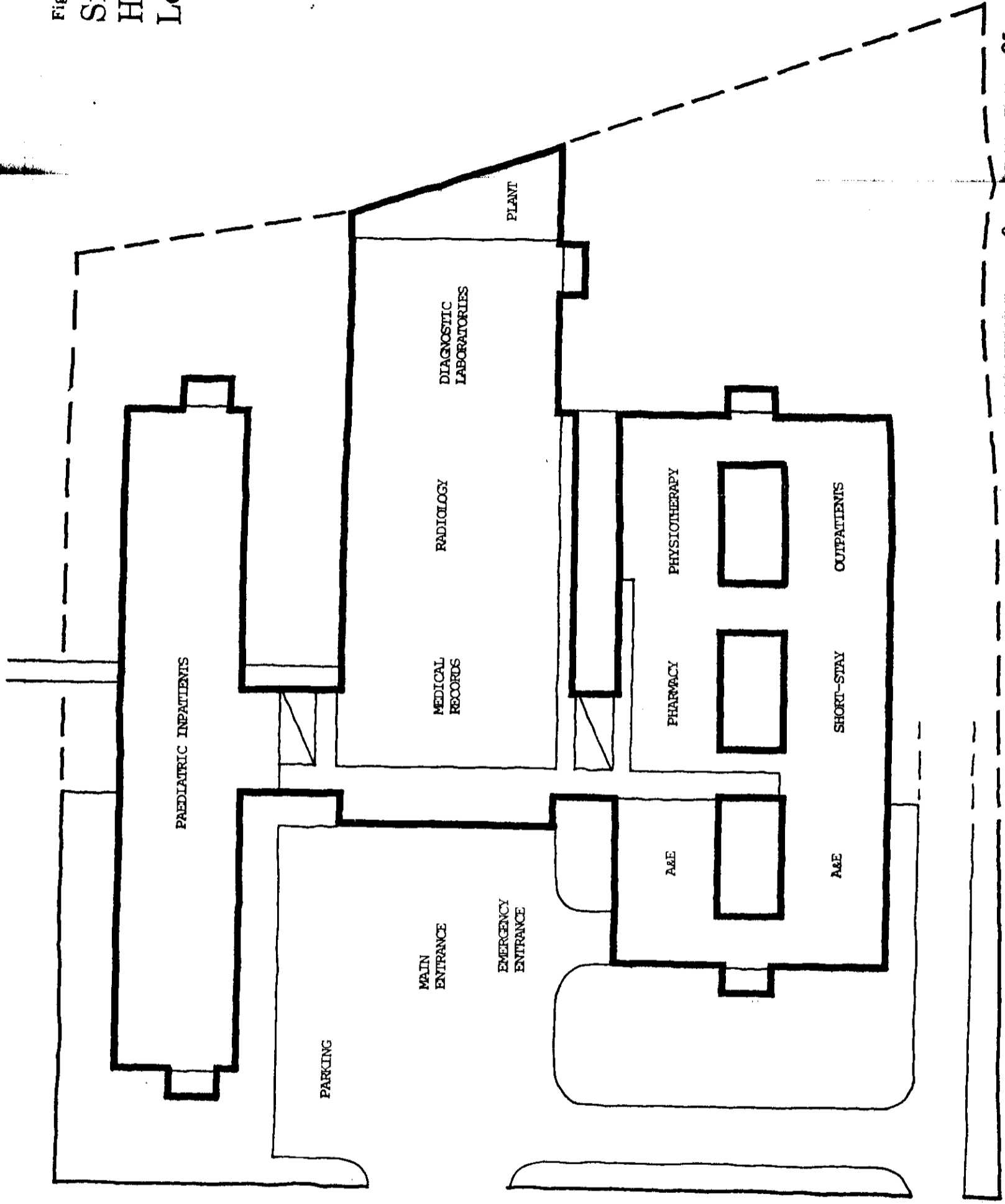


Fig 4  
Sidon Regional  
Hospital  
Level 1

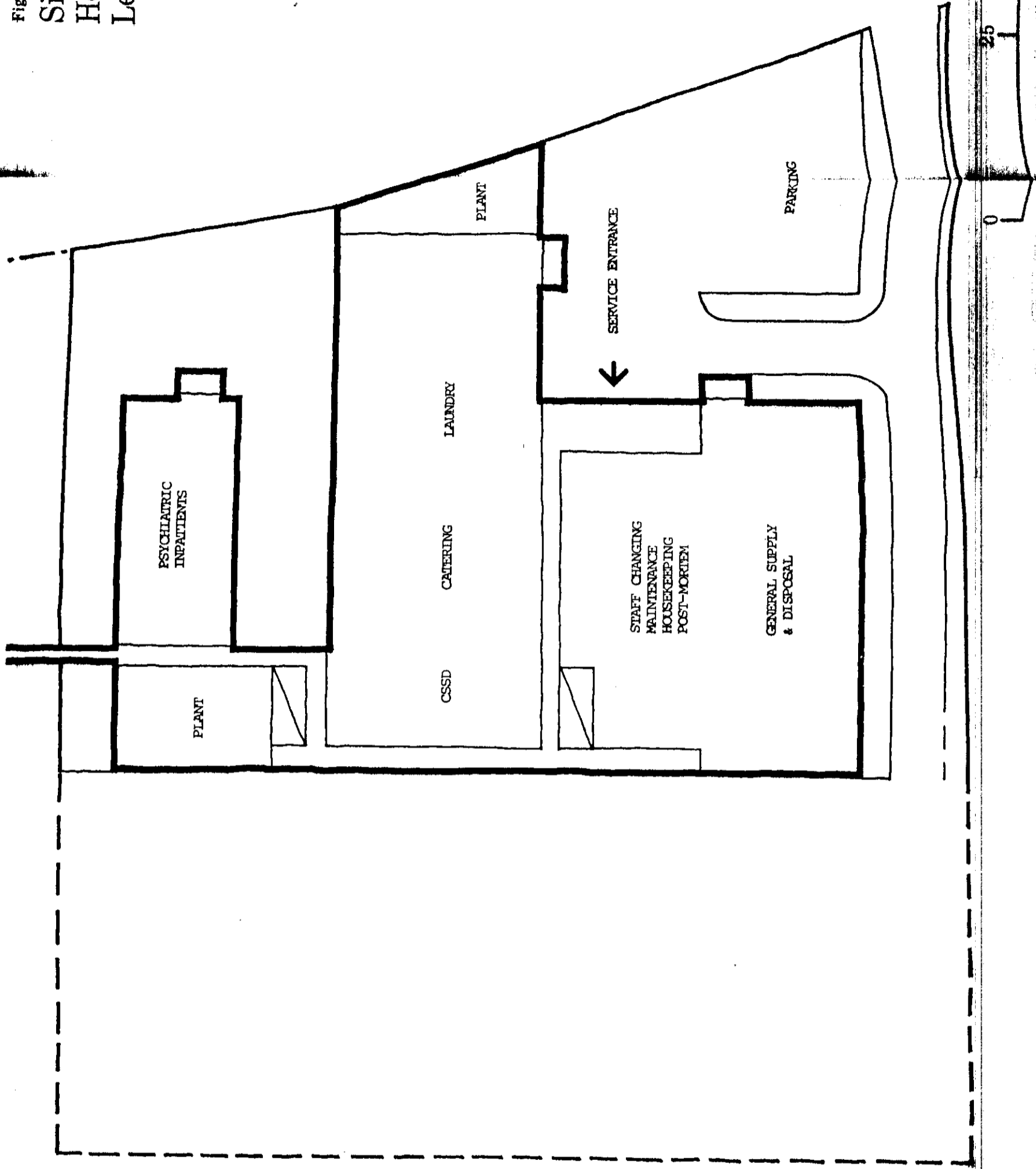


Fig 2  
Sidon Regional  
Hospital  
Site Plan

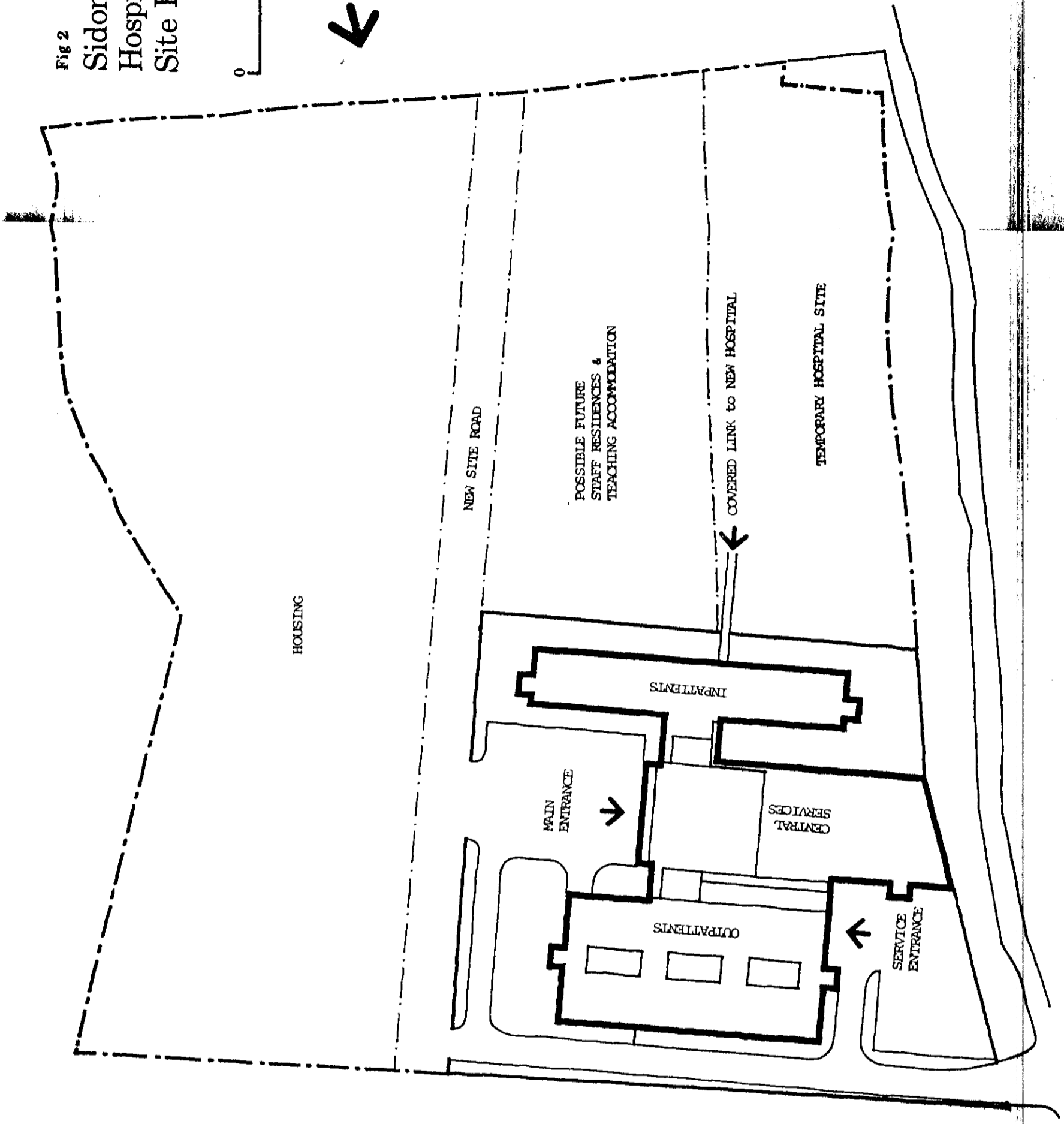
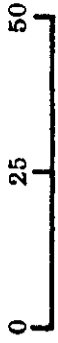
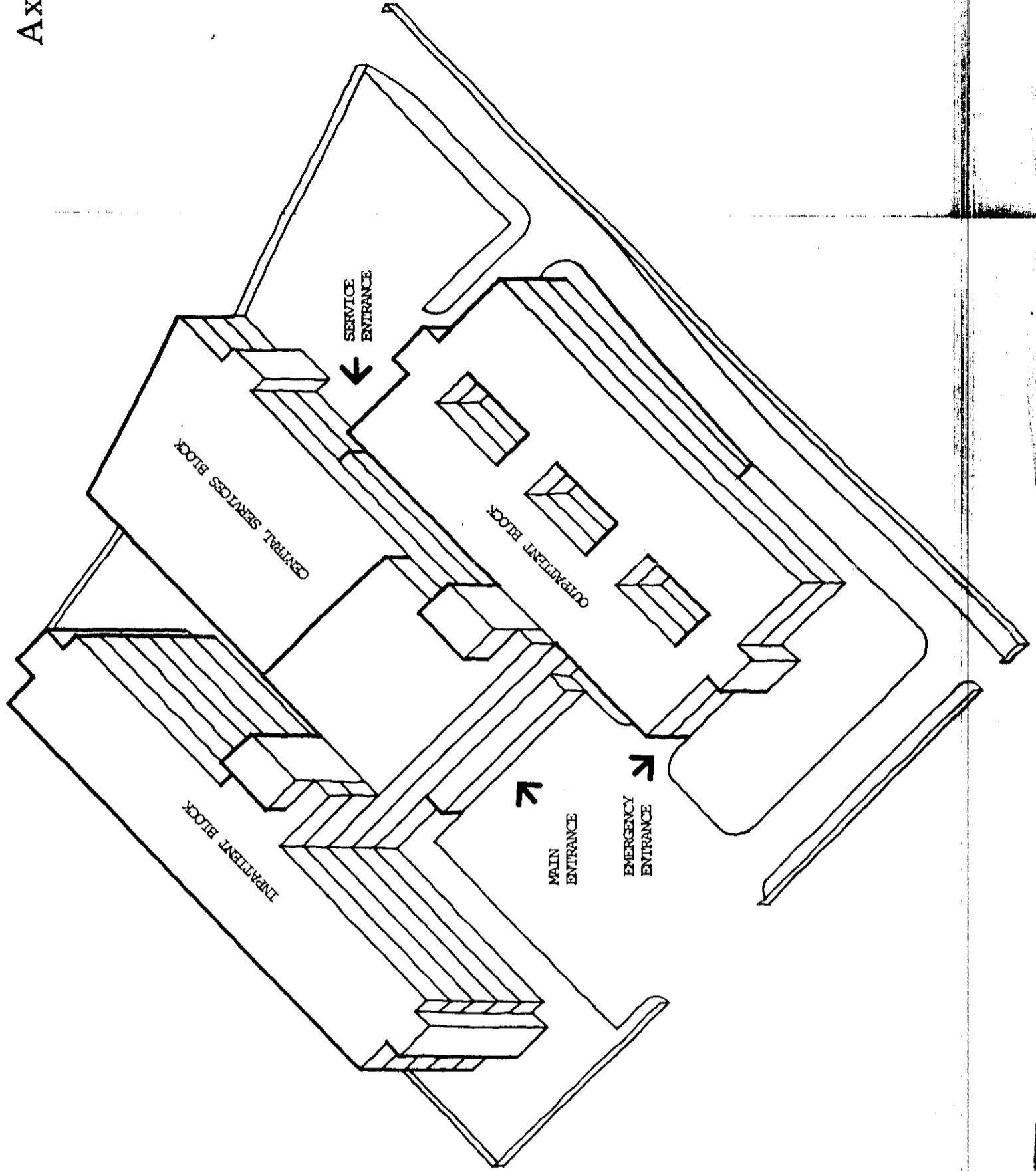


Fig 3  
Sidon Regional  
Hospital  
Axonometric



APPENDIX 1

MAJOR EQUIPMENT LIST

COST SIGNIFICANT ITEMS OF EQUIPMENT  
(ie £1,000 or more installed)

A. X-RAY EQUIPMENT	Qty.	Installed Cost (Approx)	
		Rate (£)	Total (£)
- X-Ray Dept: Bucky Table & Chest Stand	2	28 900	57 800
Tilting Table & " "	3	29 875	89 625
- A & E Dept: Basic Table for extremities with chest stand	1	17 700	17 700
- Theatres & Wards: Mobile X-Ray Machine, manually propelled	2	15 400	30 800
<b>B. OPERATING THEATRE EQUIPMENT</b>			
- Theatres: Lamp, Operating, ceiling mounted	5	4 800	24 000
" " mobile with battery	5	2 000	10 000
Table, " c/w accessories	5	4 650	23 250
Diathermy Unit	5	2 900	14 500
Anaesthetic Machine	5	2 850	14 250
Theatre Control Panel, wall recessed	5	4 900	24 500
Orthopaedic Attachments	1	2 100	2 100
Resuscitation Unit	1	4 775	4 775
- DELIVERY SUITE: Lamp, Operating, ceiling mounted	1	4 800	4 800
Lamp, Operating, mobile with battery	5	2 000	10 000
Table, Obstetric	4	3 500	14 000
Anaesthetic Machine	1	2 850	2 850
Table Operating, Obstetric	1	4 500	4 500
<b>C. PHYSIOLOGICAL MONITORING &amp; RESUSCITATION EQUIPMENT</b>			
- Theatres: Resuscitation unit, trolley mounted	1	4 775	4 775
Patient monitoring equipment	2	3 850	7 700
Monitor, Foetal Heart (Delivery Room Special)	1	3 200	3 200
- A & E Dept: Resuscitation Unit, trolley mounted	1	4 775	4 775
Patient monitoring equipment	1	2 695	2 695
- ITU/CCU: Resuscitation Unit, trolley mounted	1	4 775	4 775
Ventilator	2	6 500	13 000
Patient monitoring equipment	6	3 850	23 100
- OPD: ECG etc machines	3	2 000	6 000
<b>D. DIALYSIS UNIT</b>			
- Renal Dialysis	10	4 500	45 000



E. DENTAL UNIT

- Dental Unit c/w chair	1	2 200	2 200
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F. SPECIAL CARE BABY UNIT

- Incubator, infant	6	1 200	7 200
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G. CSSD EQUIPMENT

Autoclaves, steam, porous load/ inst. cycle 14 cu.ft. c/w steam boilers	3	26 500	79 500
Washer, instrument	1	6 200	6 200
Solvent washer; ultrasonic sink; drying cabinet etc	1	14 250	14 250

H. MORTUARY EQUIPMENT

Cadaver store, refrigerated, 12-place	1	11 200	11 200
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I. LAUNDRY EQUIPMENT

Washer, Barrier	1	17 700	17 700
" Foul Linen 45lb	1	5 400	5 400
Washing Machine 45lb	3	5 400	16 200
Hydro-Extractor 30lb	3	2 500	7 500
Tumble Dryer 55lb	2	3 400	6 800
Roller Ironer	1	15 400	15 400

J. CATERING EQUIPMENT

Tabling, worktops etc		27 000	27 000
Cooking Range	2	4 000	8 000
Bratt Pan	2)	9 800	9 800
Boiler	1)		
Steamer Oven	1)		
Mixer, 10 gal	1	4 250	4 250
Boiling Table	1)	4 900	4 900
Oven Range	2)		
Hot Cupboard	2	2 300	4 600
Cold Room	3	8 100	24 300
Servery to Dining Room	1	13 400	13 400
Central Wash-up sinks, drainers, dish-washing machines etc	)	19 100	19 100

K. LABORATORY & PHARMACY EQUIPMENT

Glassware Washing Machine	1	3 500	3 500
" Drying Cabinet	1	1 000	1 000
Laboratory Autoclave	2	4 000	8 000
Balance, Top Pan	2	1 100	2 200

" Analytical	1	1 200	1 200
Blood cell counter	1	25 000	25 000
Microscope, phase contrst	2	1 200	2 400
Centrifuge (for Haematology)	1	1 000	1 000
Electrophoresis with densitometer	1	17 000	17 000
Refrigerator, Blood Bank	1	5 000	5 000
Microscope with Kohler illumination	2	1 300	2 600
Incubator, low temperature	1	1 200	1 200
Centrifuge (for Bacteriology)	2	1 000	2 000
Biological Safety Cabinet	1	3 000	3 000
Autoclave, small (for Bacteriology)	1	2 000	2 000
Flame Photometer	1	1 400	1 400
Clinical Path Analysers (Cl <sub>2</sub> , TCO <sub>2</sub> , blood gas & uv/vis)	4	6 600	26 400
pH meter	1	1 200	1 200
Analysers "Bun" etc		5 000	5 000
Microtome	1	5 000	5 000
Cryostat	1	3 500	3 500
Tissue Processor	1	3 500	3 500
Embedding System	1	5 000	5 000
Slide stainer	1	3 500	3 500
Microscope, photo	1	2 500	2 500
Top Pan Balance-Pharmacy, electronic	1	1 300	1 300
Balance, Analytical, electronic	1	1 300	1 300
Tablet Counter, electronic	1	3 000	3 000
Dangerous Drugs Cabinet, large	1	1 000	1 000
Ointment Mill	1	1 200	1 200
Steam Pan	1	1 200	1 200
Bottle Washer, automatic	1	3 500	3 500
Autoclave, pharmacy	1	4 000	4 000
" " " small	1	1 000	1 000

STUDY TEAM

The team taking part in this Study was as follows

John Leach : Architecture and services planning

Paul Ford : Equipment

Word processing/report production by Jackie Childs

Tibbalds Partnership Limited Director in Charge : Roger England

الجمهوريت اللبنانية  
مكتب وزير الدولة لشؤون التنمية الإدارية  
مركز مشاريع ودراسات القطاع العام

Republic of Lebanon  
Office of the Minister of State for Administrative Reform  
Center for Public Sector Development Studies  
(C.P.S.D.S.)