

PN-ABA-272  
15N 570 35  
v.1

# Transport and Communications

VOLUME I:  
Main Report

SADCC: MASERU

SOUTHERN AFRICAN  
DEVELOPMENT COORDINATION CONFERENCE

Maseru, Kingdom of Lesotho - 07/00 1980

### 2.3 Telecommunications

International teletraffic records are collected for international accounting and as basic data for operations and planning. Separate records are normally kept for telephone, telex, data and telegram traffic.

The telephone traffic derived from these records is presented in Table 2.3-1 showing annual traffic in paid minutes within the region. Looking into the past the historic data reveal deep fluctuations, which means that beside the data on present traffic volumes also other factors have to be considered before the total demand, including suppressed demand, can be estimated.

The current telephone traffic figures reveal a high demand between Zambia, Zimbabwe, Malawi and Botswana. The traffic is also high between the port towns of Maputo, Beira and Dar es Salaam and the hinterlands of the ports. In addition all member countries have high traffic with Europe.

The other types of teletraffic, for which no comprehensive data are available, follow often the same demand pattern as telephone traffic and have much smaller capacity requirements on the transmission routes.

No comprehensive forecasts for 1990 or beyond are available. Short term estimates from various sources exist. Table 2.3-2 shows the estimates of outgoing telephone traffic in 1985 mostly based on the existing forecasts but with some additions and revisions. Yet, the presented figures do not constitute a proper regional forecast and further work will be carried out.

- insufficient or unreliable navigational and approach aids and airport lighting equipment;
- poor telecommunications and diversity in existing equipment types.

### 3.5 Telecommunications

Effective regional telecommunication system is a prerequisite for regional co-operation and development. The sector is in need of rapid expansion and modernization.

#### 3.5.1 Regional Telecommunication System

The present system consists of open wire lines, high frequency (HF) radio links, VHF and microwave links, satellite earth stations and international exchanges.

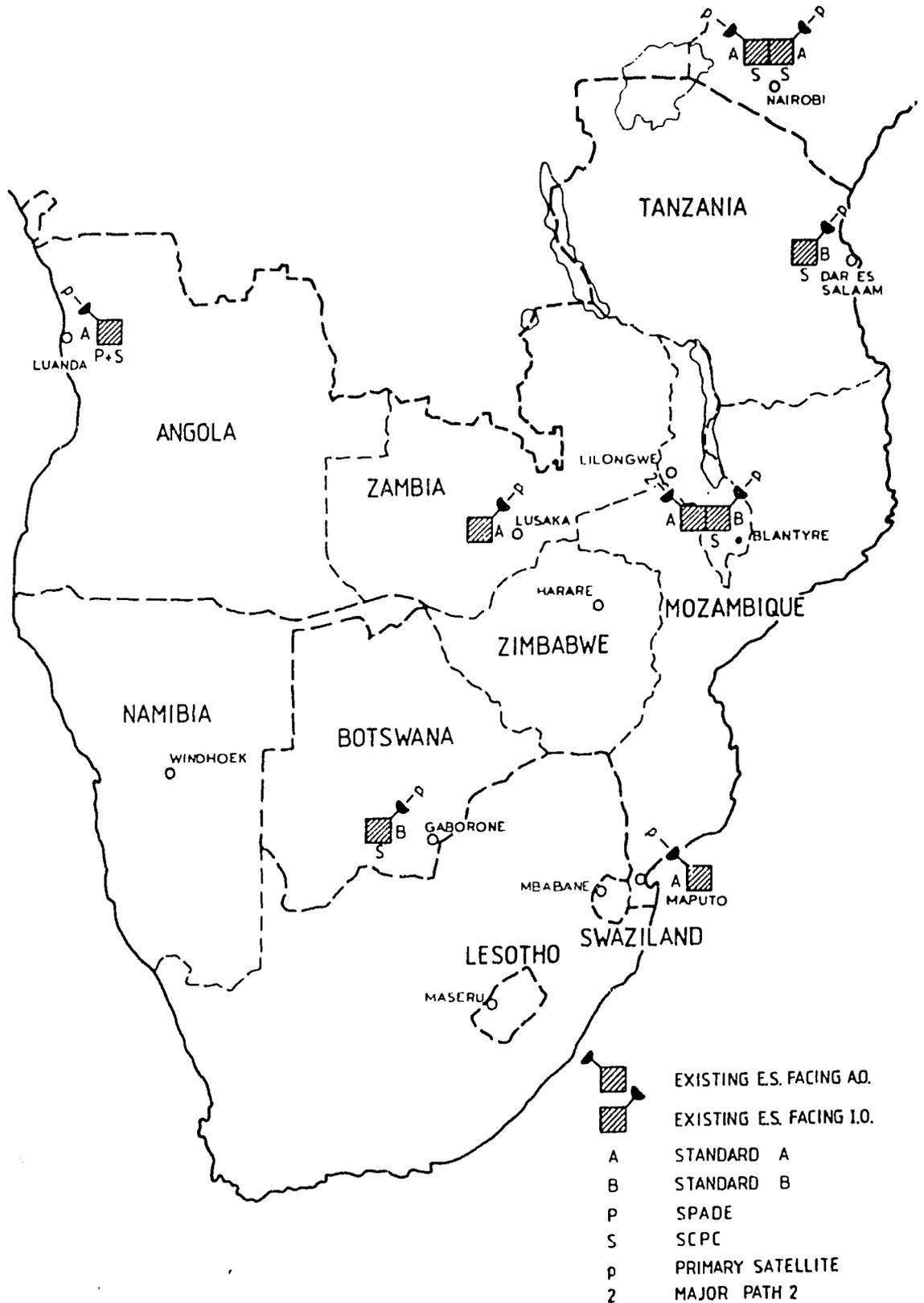
The open wire lines and HF radio links still play an important role in the nearest future but the capacity and quality of service are inadequate for the future requirements.

Some low capacity radio links provide international service in the area but the main demand is for high capacity microwave links now in a process of being provided. The Zambia-Tanzania microwave link has already been commissioned but the main programme is still to be implemented. As the microwave links will constitute the main backbone in the regional network, the present lack of high capacity terrestrial bearers can be deemed to be the worst bottleneck as regards equipment. The main terrestrial connections have been presented in Figure 3.5-1, Telecommunications Terrestrial Links in 1982. The existing satellite earth stations appear in Figure 3.5-2, Existing Satellite Earth Stations in 1982.

They have played a vital role and will do so in the future by



FIGURE 3.5-2 SATELLITE EARTH STATIONS IN 1982



providing high quality long distance connections to other continents, to Africa and to some extent, also within SADCC countries. No domestic systems have been set up so far. Co-ordinated planning of the new antennas and shared use of the existing ones will be needed.

Automatic international switching centres (ITSC's) exist in Tanzania, Zambia and Malawi but most of the traffic within and out of the region is manual or semiautomatic. To achieve international subscriber dialling, a number of new international switching centres will have to be provided together with extensions.

As for telex, the traffic is mostly automatic already. To meet the growing demand, several new international telex exchanges or extensions to the existing ones will be needed.

Concerning the reliability and maintenance of the system the following can be mentioned.

The open wire lines between Zimbabwe and neighbouring countries have been restored to working order except the line to Beira. Mozambique has difficulties in open wire maintenance especially on the routes to Zimbabwe and Malawi which have been mostly out of service.

There are still several HF telephone and telegraph channels in operation between the member countries. Some maintenance problems exist in Mozambique. Generally propagation on HF links is susceptible to fading and interference and the links will be phased out from regular public service.

High capacity modern microwave links have only recently started to play a role on the crossborder routes. Certain maintenance data have been exchanged already but for the new links, comprehensive maintenance procedures have to be agreed upon.

The routines for satellite circuits must follow INTELSAT practices. The earth stations at Maputo and Luanda have shortages of spares and to some extent shortages of skilled staff. Otherwise the reliability has been

The main work on international switching centres is still ahead aiming at the introduction of regional subscriber dialling within the coming few years. By then, proper international maintenance centres need to be fully operational.

### 3.5.2 Operations

Presently the telephone calls between the SADCC countries are routed via transit points in Africa or Europe in most cases.

After the implementation of the regional projects up to 1986, the amount of cases requiring outside transit points could be reduced by at least 50 per cent.

The Administrations in the region have agreed on a basic switching and routing plan in the 12th Regional Telecommunications Conference in Seychelles in 1977, which was further confirmed at the 3rd Africa Telecommunications Conference in Monrovia in 1980. The Southern Africa Telecommunications Administrations (SATA) have also agreed to follow the plan at meetings in Lusaka 1981 and Zimbabwe 1982.

In the future Zambia and Kenya will be used as transit exchanges for automatic telephone traffic.

At present the International Telecommunications Union (ITU) is working out routing plans for 1985/90/95 as agreed by the 16th Regional Telecommunications Conference 1982. The progress will be reviewed by the southern group, SATA, in Swasiland 1983.

### 3.5.3 International Accounting Rates and Procedures

The administrations have mutual agreements on the procedures and rates for charging each other for calls and leased facilities. Basically two procedures have been applied in the region, namely bilateral agreements and the accounting procedures of the Commonwealth Telecommunications Council, which may be used only by those countries which continue to prefer Commonwealth transit points. The bilateral agreements fix the rates at the level the parties find appropriate though mostly based on the CCITT (ITU) recommendation. Generally the universal rate standards tend to be high with the effect that direct routings e.g. via satellite may appear more attractive.

As a conclusion, there is a need to adopt recommendations for accounting rates which give fair compensation but do not inhibit optimal use of the regional network and which - perhaps - also favour utilization of facilities of the region. Agreements will be needed for international subscribers dialling and restoration operations.

ITU has carried out cost studies of telephone and telex services and calculated rate standards, which are recommended to be adopted by the administrations. The next step will be the costing of other services, leased circuits etc.

Radio frequency co-ordination and management is globally entrusted to the International Frequency Registration Board of ITU (IFRB). The national radio frequency management units have shortcomings as regards staff and monitoring facilities. The administrations recognize the need to establish an improved management and monitoring unit in Angola, Botswana, Lesotho, Mozambique, Swaziland, Zambia and Zimbabwe. The compatible frequency plans need to be prepared and maintained. Further the management units need more data from each other.

### 3.5.4 Human Resources and Training

Demand for training varies from country to country, being quite pressing in Mozambique and Angola, sizeable in Zimbabwe and more manageable in other countries. Availability of trainees is generally good but the level of basic education varies from six to nine years.

Basic level training is available to some extent in all countries while intermediate level is offered by Malawi, Tanzania, Zambia, Zimbabwe and to some extent Angola. Most countries wish to develop their national institutions to cater for intermediate training.

At the professional level, at least supplementary training abroad is needed in most countries.

A common training school in Malawi is providing telecommunications and postal training at an intermediate level for Botswana, Lesotho, Malawi and Swaziland. This school is part of a scheme, financed by the Commonwealth Fund for Technical Co-operation (CFTC), EEC and the four member countries, which also provides basic level training in each of the member countries.

At present the following regional activities are in progress or planned:

- ITU's CODEVTEL project is producing course packages;
- ITU's regional training development expert in Nairobi co-ordinates ITU's training projects in the region;
- Regional Telecommunications Conference for Eastern and Southern Africa Sub-region has instituted a Training Committee;
- Southern Africa Telecommunications Administration (SATA) Conference has agreed to exchange information on the available training facilities;
- PATU intends to establish an expert position for training and technical co-operation by the end of 1982;

- ITU is planning to launch a project "AFRALTI" for Regional Training Co-ordination;
- Multi-country Training School is operating in Malawi serving Botswana, Lesotho, Malawi and Swaziland;
- Several countries are sending trainees to the training centre in Kenya and to developed countries.

Most countries experience shortcomings in their training programmes regarding finance and availability of instructors and trainees. From a regional point of view, attention should be paid to the areas where the operation and development of the regional telecommunication system are endangered by staff shortage as is the case in Mozambique. Management support and increase of training is required.

#### 3.5.5 Main problems

The regional telecommunication network capacity is inadequate calling for the establishment of high capacity terrestrial bearers. For long distance teletraffic and transmission of TV programmes all countries need a satellite earth station.

To facilitate international subscriber dialling several new international switching centres must be provided.

Severe maintenance shortcomings have caused persistent outages on communications to the ports of Mozambique. Immediate restoration measures are required.

The routing of calls in the region often takes place through transit points outside of the region. For better self-reliance and lower costs, new routing options should be created. Related to this, prohibitively high transit charges should be mitigated.

The co-ordination of the use of radio frequencies is facing difficulties due to the inadequate resources of several frequency management units.

The fundamental problem behind the operational difficulties is the staff shortage. The training requirements are the most pressing in Mozambique.

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## CHAPTER 6 REGIONAL PLAN AND IMPLEMENTATION PROGRAMME FOR TELECOMMUNICATIONS

The development of the regional telecommunication system will be outlined in the subsequent sections with an emphasis on the first half of the decade. The implementation of the ambitious improvements require a great deal of operational co-operation and sizeable investments.

### 6.1 Regional Plan and Objectives

Inter-African planning of telecommunications has been dealt by Pan African Telecommunications Union (PATU) and ITU. A long term plan conceived a number of years ago aims at providing Africa with high capacity telecommunication network, PANAFTEL. The main emphasis in the PANAFTEL plan has been laid on the provision of a terrestrial network. The SADC countries have clearly committed themselves to the implementation of the plan. Based on this and the development programmes of the telecommunications administrations the objectives for the decade can be laid down as follows:

- Establishment of the terrestrial PANAFTEL links;
- installation of a satellite earth station in all countries by 1985;
- extension of international subscriber dialling to all countries and main cities;
- self-reliance of the region with regard to interregional tele-traffic;
- improvement of the reliability of service to good international level;
- possibility of transmission of TV programmes.

## 6.2 Operational Co-ordination

Due to the very nature of the worldwide telecommunication system wide ranging international co-operation is a prerequisite for efficient service. Co-operation in operational matters aims at efficient running of present services and preparations for the coming new ones. From the wide field of operational matters the following have great regional relevance:

- co-ordination and exchange of plans and studies;
- exchange of statistics and data on existing international plant and facilities;
- exchange of traffic data and forecasts of traffic;
- maintenance, routing and temporary restoration;
- tariffs and rates;
- radio frequency co-ordination;
- regional training facilities.

The practical arrangements include bilateral contacts, working groups, ad hoc meetings, regional and global conferences and seminars and studies.

It is proposed that an ad hoc meeting be convened between Malawi and Mozambique and Zimbabwe to finalize and agree on the near future actions regarding restoration, maintenance, satellite projects and microwave projects.

On the other hand SATCC shall assist with preparation of documentation for the annual conferences of Southern Africa Telecommunications Administrations (SATA) which shall include all member countries covering a wide field from capital projects to operational co-ordination.

Co-ordination with ITU, PATU, ECA and INTELSAT shall be maintained.

For the near future SADCC countries' specific tasks include the remaining restoration of existing telecommunication links, the adoption of new routing plans and accounting rate standards, improvement of traffic data collection and forecasting and satellite programme harmonization.

### 6.3 Training

Severe staff shortages are experienced by some telecommunications administrations, particularly in Mozambique. The shortages have an adverse effect on the regional development, requiring concerted training efforts. Concerning Mozambique the preparation of a telecommunications training project is included in the SATCC Project No. 0.0.2, Operational Co-ordination Development Programme.

### 6.4 Capital Investment Projects

The projects singled out for the purpose of regional co-ordination by SATCC fall mainly into the following categories:

- rehabilitation/upgrading of existing plants;
- regional microwave radio relay systems;
- satellite earth stations;
- international telephone switching centres and telex exchanges.

The total costs of the projects amount to US dollars 235 million in current prices for which US dollars 108 million have been allocated or committed.

#### 6.4.1 Rehabilitation/Upgrading

The only outstanding rehabilitation project, Project No. 5.5.4, Upgrading of the Open Wire Carrier System Beira-Mutare, should be carried out as soon as possible. In addition a low capacity radio link is to be installed between Mutare and a troposcatter terminal station accessible via an existing microwave link from Beira. Path survey is in progress and provision of equipment and installation are being discussed between Mozambique and Zimbabwe.

Urgent restoration of communication between Malawi and Beira/Nacala is of equal importance, planned to be effected through installation of HF radio links and possibly by restoration of the open wire line between Blantyre and Beira. The HF-equipment would cost about US dollars 150,000.

More permanent and effective improvements will be provided by the satellite project No. 5.5.1 by 1984 which in its extended form would cater for teletraffic between the three countries and the port towns of Maputo, Beira and Nacala.

The long term improvements will come with the implementation of Project No. 5.5.3, National Telecommunication Development Project with Connections to Neighbouring Countries.

To co-ordinate the actions outlined above the tripartite meeting between Malawi, Zimbabwe and Mozambique mentioned in Section 6.2 is to be convened.

#### 6.4.2 Regional Microwave Radio Relay Systems

The regional microwave radio link projects have been presented in Figure 6.4-1. Implementation is in progress for microwave links Francistown-Bulawayo (Project No. 5.2.1), Bulawayo-Livingstone (Project No. 5.9.3) and Lilongwe-Chipata (Project No. 5.4.1). Urgent implementation is required for the Project No. 5.5.3, National Development Project with



Connections to Neighbouring Countries, which contains the microwave link to and within Mozambique. Further financing is required for this and for the links Mzuzu-Mbeya (Project No. 5.7.1) and Zambezi-Luene (Project No. 5.8.4).

An important microwave link will be commissioned shortly between Swaziland and Mozambique giving also Swaziland direct access to the terrestrial PANAFTEL network via Mozambique.

#### 6.4.3 Satellite Earth Stations

The satellite earth station programme extends only up to 1986 since the telecommunications administrations do not have any definite plans for the late 1980's. The most urgent projects provide stations to Swaziland (Project No. 5.6.1), Zimbabwe (Project No. 5.9.2), Lesotho (Project No. 5.3.1) and the Mozambican port towns of Beira and Nacala (Project No. 5.5.1). Later extensions and second antennas are provided by Project No. 5.1.1, Earth Station Standard A, at Luanda, Project No. 5.8.2, Extension of the Earth Station at Mwembeshi, Lusaka, and a new station in Tanzania. The programme has been presented in Figure 6.4-2.

In order to achieve improved interconnectivity amongst the different types of stations the later extensions should be carefully co-ordinated and harmonized and shared use of the existing stations examined.

#### 6.4.4 International Telephone Switching Centres and Telex Exchanges

International telephone switching centres will be provided to Zambia (Project No. 5.8.1), Zimbabwe (Project No. 5.9.1), Swaziland (Project No. 5.6.2), Mozambique (Project No. 5.5.3(1) and 5.5.3(7), Tanzania (Project No. 5.7.2), Botswana and Lesotho. The provision of these switching facilities open up quite comprehensive international subscriber dialling at least between the capital cities by 1985.

FIGURE 6.4-2 SATELLITE EARTH STATIONS IMPLEMENTATION PROGRAMME



- |   |                           |     |                   |
|---|---------------------------|-----|-------------------|
|   | EXISTING E.S. FACING A.O. |     | RFS TARGET        |
|   | PROPOSED E.S. FACING A.O. | P   | SPADE             |
|   | EXISTING E.S. FACING I.O. | S   | SCPC              |
|   | PROPOSED E.S. FACING I.O. | C   | CFDM/FM           |
| A | STANDARD A                | (S) | FUTURE SCPC       |
| B | STANDARD B                | p   | PRIMARY SATELLITE |
| D | DOMESTIC                  | 2   | MAJOR PATH 2      |
|   |                           | s   | SPARE SATELLITE   |

The telex system is mostly operating in automatic mode already. Assistance is sought for the implementation of Beira Telex Exchange (Project No. 5.5.3(2), which is linked with the improvement of telecommunication services to the Mozambique ports.

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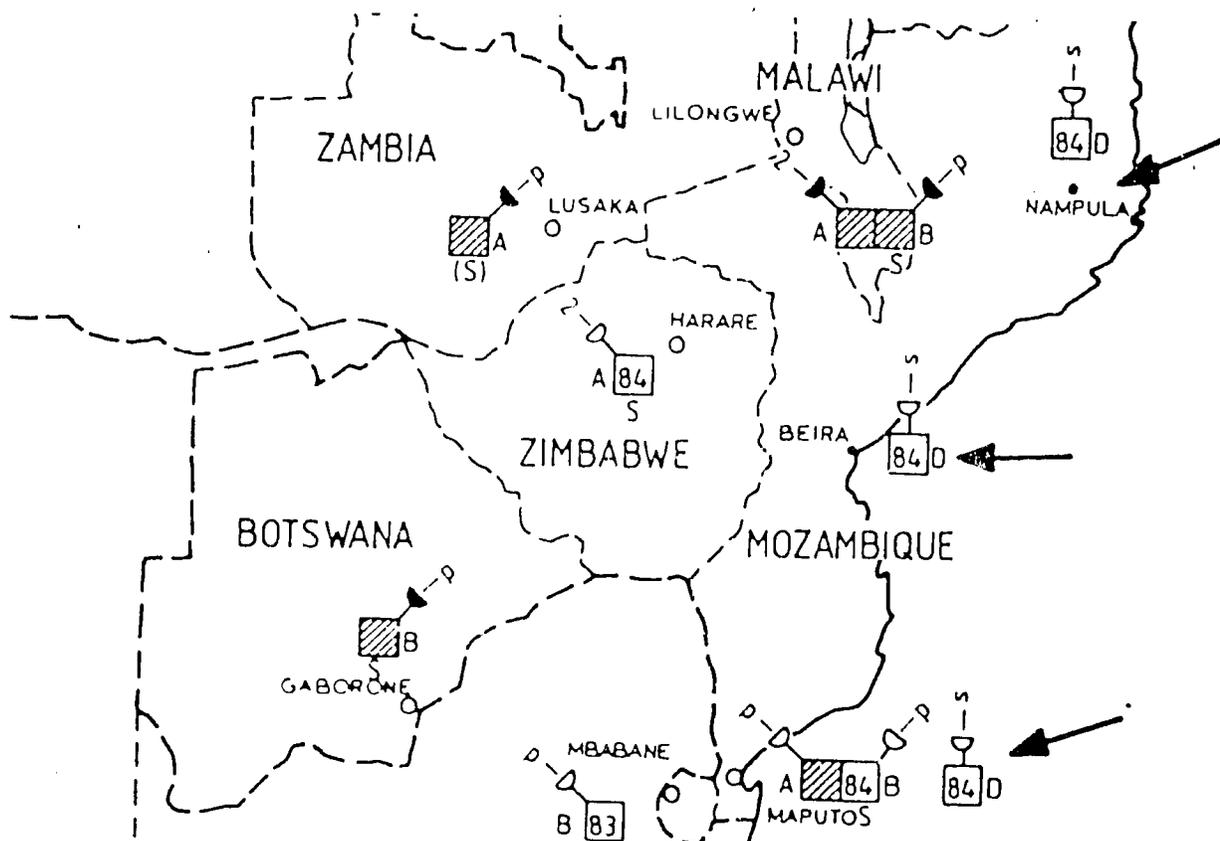
# Transport and Communications

VOLUME II:  
Review of Individual Projects

SADCC: MASERU

SOUTHERN AFRICAN  
DEVELOPMENT COORDINATION CONFERENCE  
Maseru, Kingdom of Lesotho · 27/28 January 1983

NATIONAL/REGIONAL SATELLITE COMMUNICATION SYSTEM  
MOZAMBIQUE



1. Identification and Summary

Scope of the project: To provide a quick solution to the acute and pressing shortage of communications to important port towns of Beira and Nacala and to complement the terrestrial network expansion programmes, aiming at permanent long-term improvements

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique  
Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 12 million (1983 prices)  
total: USD 12.8 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1982

Duration: 2 years (target RFS 1984)

Secured financing: USD 6.5 million from Kuwait Fund and France

W

## 2. Project Description

This project is based on the earlier 5.5.1 "Satellite Station at Beira" which was expanded according to the findings of the Feasibility Study. The project now comprises implementation of a network of Earth Stations located in Nampula, Beira and Maputo. Three main solutions have been studied, each one with sub-options depending on the penetration of manual, semi-automatic and automatic working. The Mozambican administration is currently studying the options but the main and most comprehensive option would provide the following.

Standard B station in Maputo interworking over the Indian Ocean Primary Satellite with Malawi, Zambia, Tanzania and Botswana; further one domestic type station in Maputo, Beira and Nampula interworking with each other only. In this option Zimbabwe would be accessed via Malawi or Zambia.

## 3. Present Project Status

Feasibility study has been completed by the French consultant. A loan agreement has been previously signed with the Kuwait Fund to implement the Beira station for an amount of 1 million Kuwait Dinars (USD 3.5 million). Further financing of FF 30 million (or USD 3.5 million) has been pledged by the French Government, leaving some USD 5 million to be financed from other sources.

## 4. Future Activities

To maintain the time schedule the following actions must be taken:

- Final decision by TDM on the choice of system configuration;
- System specifications will have to be prepared. The cost of consultancy is included in the total cost estimate;
- Agreement with Intelsat and the countries involved will have to be worked out;
- Approaches for additional funds.

NATIONAL TELECOMMUNICATION DEVELOPMENT PROJECT WITH CONNECTIONS TO NEIGHBOURING COUNTRIES  
MOZAMBIQUE



1. Identification and Summary

Scope of the project: To implement a TLC network, covering transmission and switching systems, capable of meeting the national requirement as well as providing cross-border connections to Malawi, Zambia, Zimbabwe and Tanzania

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique, Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 130 million (1983 prices), regional part  
total: USD 152 million (current prices) regional part

Foreign currency part: 90%, regional part

Proposed start: 1982

Duration: 10 years

Secured financing: About USD 70 million of phase I

## 2. Project Description

The project replaces the earlier 5.5.2 and 5.5.3 comprising now comprehensive telecommunications development for the coming ten years. The implementation is divided in three phases:

Phase I: Backbone sections around Maputo and Beira with cross-border connections to Malawi and Zimbabwe;  
(83-85)

Extensions/replacements/new installation of telephone exchanges connected to the implemented radio links;

International telephone switching centres of Maputo and Beira.

Phase II: Backbone sections from Quelimane to Nampula-Lichinga-Nacala-Femba with cross-border connection to Tanzania;  
(86-90)

Extensions/replacements/new installation of exchanges connected to the implemented radio links.

Phase III: New installation of telephone exchanges in 180 smaller localities and provision of the relevant trunk circuits.  
(91-92)

The project contains a regional component estimated to amount to USD 152 million consisting of installations deemed to be necessary for the regional service, including backbone microwave links between the regional port towns and neighbouring countries, associated switching centres, and telex switching centres. Since the detailed list of sub-projects has not been agreed upon as yet, the following list of seven sub-projects describes only those requiring close co-ordination with the other countries during the implementation. The total cost of the regional and national parts of the projects are estimated to amount to USD 660 million.

## 3. Present Project Status

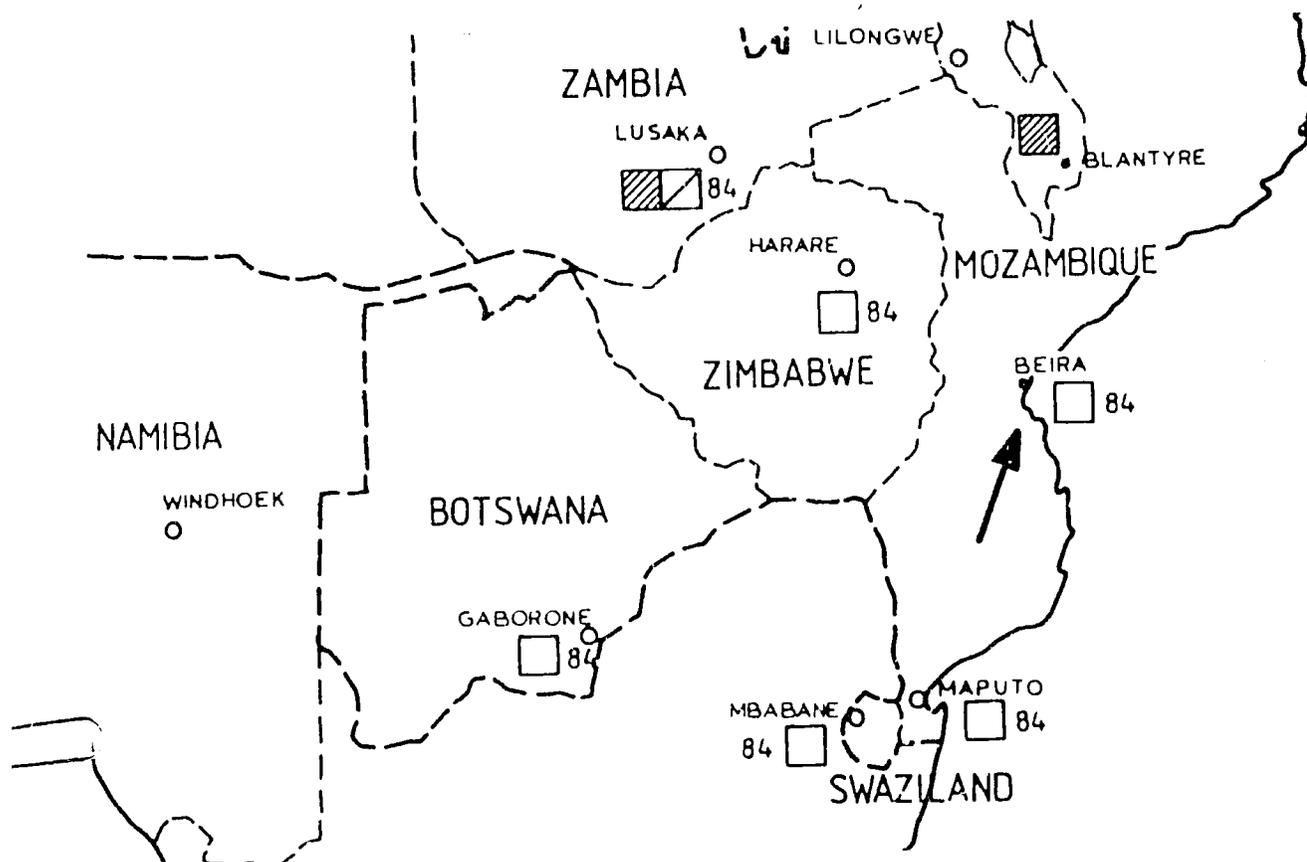
The engineering is in progress by the Consultants. The specifications for the first phase are expected to be ready by mid-1983.

Efforts to arrange finance have produced an agreement with Italy about a soft loan of USD 50 million. Further financing of about USD 20 million is being discussed with Norway and Sweden jointly.

## 4. Future Activities

Actions must be taken to secure finance for the whole project. Finance will have to be obtained for the outstanding portion of Phase 1 and for the subsequent phases. Short term action will be needed to restore minimum communication to the port towns co-ordinated with the neighbouring countries. Consultancy for the later phases will be needed.

INTERNATIONAL TRANSIT SWITCHING CENTRE (ITSC) AT BEIRA  
MOZAMBIQUE



1. Identification and Summary

Scope of the project: To provide international subscriber dialling facilities to neighbouring countries and beyond from Beira area

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique; Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 3.2 million (1983 prices)  
total: USD 3.7 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1983

Duration: 2 years for the first phase

Secured financing: Included in 5.5.3

## 2. Project Description

This project has been renumbered (previous 5.5.2) since it now forms an integrated part of 5.5.3. The project comprises implementation of an international transit switching centre (ITSC) in Beira with initial capacity of 1000 telephone channels on a minimum of 20 routes, transit routing and charging facilities employing digital techniques. The new exchange will provide subscriber trunk dialling and ISD to Zimbabwe and Malawi.

The ITSC is related to the implementation of the radio links from Beira towards Mutare and Blantyre and of the earth station (project 5.5.1).

## 3. Present Project Status

The ITSC is included in the first phase of project 5.5.3; for which engineering and design are in progress by the Consultant.

## 4. Future Activities

Financing to be secured as for project 5.5.3.

NEW TELEX EXCHANGE IN BEIRA  
MOZAMBIQUE

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1. Identification and Summary

Scope of the project: Provision of a new digital telex exchange at Beira to replace the existing inadequate unit

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique; Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 2.35 million (1983 prices)  
total: USD 2.5 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1982

Duration: 2 years

Secured financing: Included in 5.5.3

2. Project Description

The existing automatic telex exchange in Beira was installed in 1972 with a maximum capacity of 200 subscribers which is expected to be exhausted during 1983. Since the earlier plan to continue up to 1987 with re-used equipment from Maputo turned impossible, the provision of the new exchange has become an urgent requirement.

The new unit has been designed to have a capacity of 760 subscribers with full facilities for international traffic.

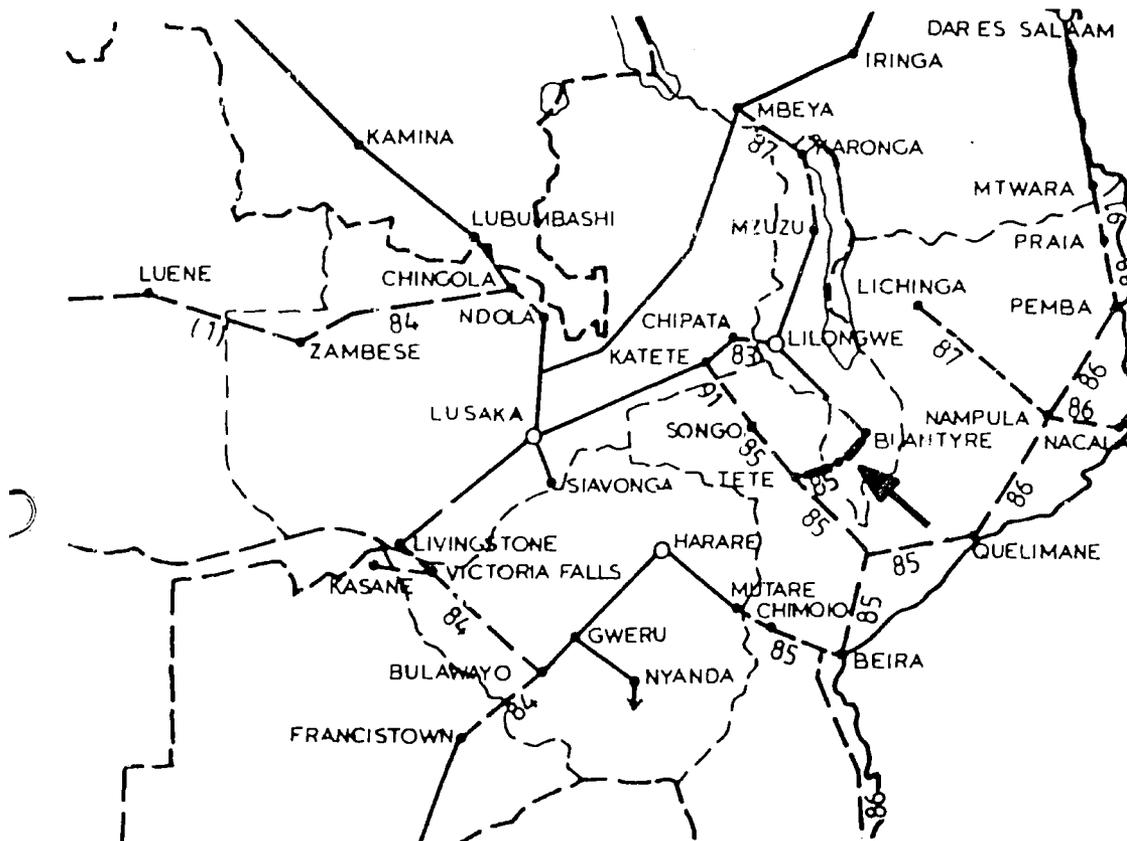
3. Present Project Status

Specifications are under preparation by the Consultants.

4. Future Activities

Financing must be secured as for the whole 5.5.3 project.

MICROWAVE LINK TETE - BLANTYRE  
MOZAMBIQUE



1. Identification and Summary

Scope of the project: One of the links constituting the backbone telecommunications system in Mozambique, also linking the networks of Mozambique and Malawi

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique; Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 2.9 million (1983 prices)  
total: USD 3.1 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1984

Duration: 2 years

Secured financing: The section in Mozambique is included in 5.5.3

### Project Description

The project calls for a provision of a 960 channel microwave link Blantyre-Tete, comprising 6 hops, interconnecting the existing microwave system of Malawi with the future national network of Mozambique. This link is a part of the PANAFTEL network capable of satisfying the long-term requirements between Malawi and Mozambique, providing also alternative routes to Tanzania and Zambia and once the Mozambique backbone system is established, interconnection of the Swaziland microwave system with the PANAFTEL network as well as an alternative route from Malawi to Zimbabwe.

#### 3. Present Project Status

The link is included in the phase 1 of the implementation plan of Project 5.5.3 and the specifications of the Mozambican part are under preparation by the Consultants.

#### 4. Future Activities

The cross-border hop, not yet included in the consultancy, has to be surveyed.

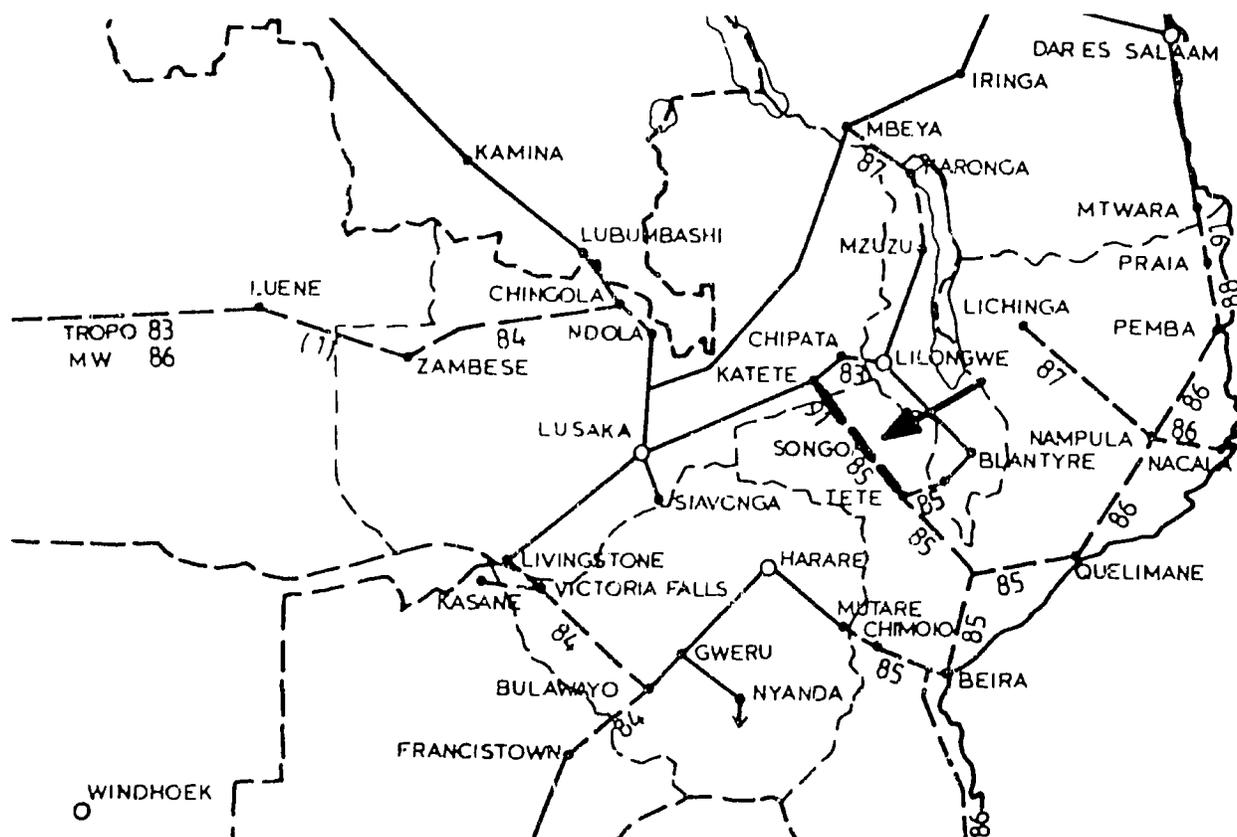
Implementation programme and specifications should be co-ordinated between Malawi and Mozambique.

Financing of the Mozambican part is included in the Project 5.5.3.

Action must be taken to secure funds for the Malawi section.

Apart from this, immediate actions has to be taken to restore communications to Beira and Nacala before the implementation of the link.

MICROWAVE LINK TETE - KATETE  
MOZAMBIQUE



1. Identification and Summary

Scope of the project: One of the links constituting the backbone telecommunication system in Mozambique, also linking the networks of Mozambique and Zambia

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique; Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 5.4 million (1983 prices)  
total: USD 7.6 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: Tete-Songo 1983  
Songo-Katete, tentatively 1988

Duration: 3 years for the section Tete-Songo  
3 years for the section Songo-Katete

Secured financing: -

### Project Description

The link will be made up of two sections:

- Tete-Songo consisting of 5 hops;
- Songo-Katete not yet surveyed consisting of 6 to 7 hops.

The link is part of the terrestrial PANAFTEL network which will provide an interconnection of the Zambian and Mozambican networks opening up a transit route from Swaziland and possibly Tanzania.

### 3. Present Project Status

The section Tete-Songo has been planned to be implemented during the phase 1 of the project 5.5.3 for which the specifications are being prepared by the Consultants.

The section Songo-Katete has been scheduled to phase 3 and no detailed studies are in progress.

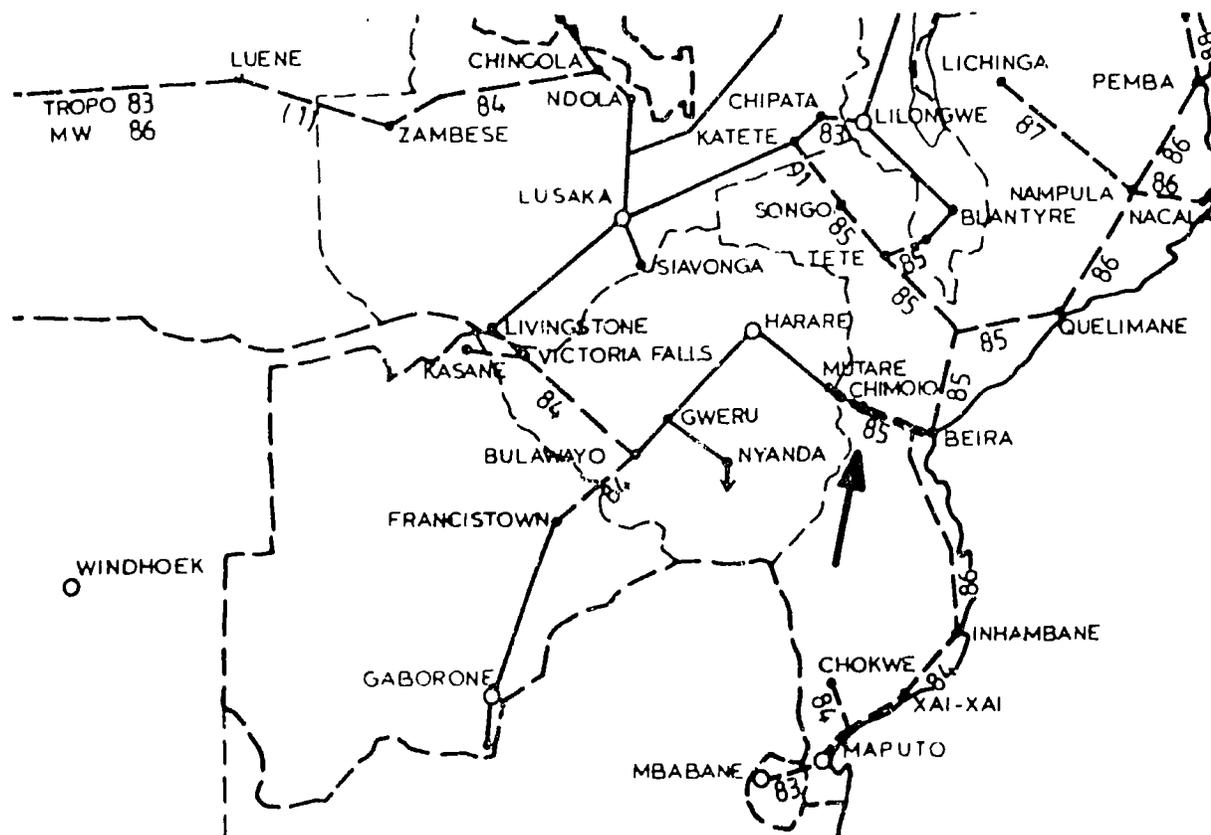
### 4. Future Activities

Financing of Mozambique part must be secured as per project 5.5.3. If the present target for completion stays for the Songo-Katete section, any further action can be deferred.

Mozambique and Zambia should jointly check the implementation programme assessing also the advantages of an earlier time schedule for the cross-border section.

Should the implementations turn out to be possible earlier, finance for the Zambian part would also be needed.

MICROWAVE LINK BEIRA - MUTARE  
MOZAMBIQUE



1. Identification and Summary

Scope of the project: One of the links constituting the backbone telecommunications system in Mozambique, also linking the networks of Mozambique and Zimbabwe

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique; Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 3.1 million (1983 prices)  
total: USD 3.4 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1983

Duration: 3 years

Secured financing: Included in 5.5.3 for the Mozambican part

## 2. Project Description

The project consists of a 960 channel microwave link with 6 hops, linking Beira and Chimoio, with a cross-border section to Zimbabwe (Mutare).

The link is included in the PANAFTEL network and is of vital importance to the Beira Port Transport System. It will carry the traffic from/to Mozambique and Zimbabwe, providing also optional transit connections from Zimbabwe to Malawi, Tanzania and Swaziland.

The total cost for the subproject is estimated to be USD 3.4 million. Out of this total some USD 0.3 million will be needed for installation in Mutare, Zimbabwe.

## 3. Present Project Status

Specifications of the Mozambique part are under preparation by the consultants.

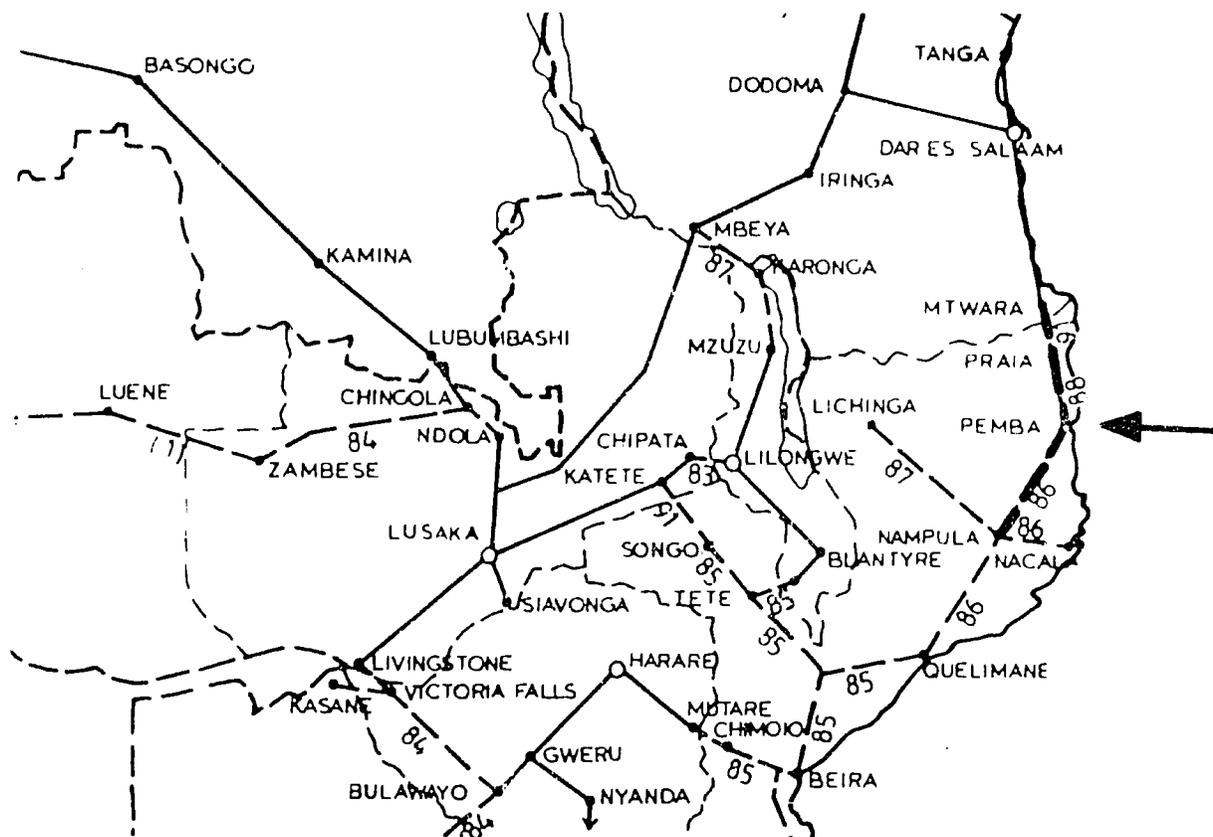
## 4. Future Activities

Survey of the cross-border hop must be undertaken and the implementation programme and specifications co-ordinated between Mozambique and Zimbabwe.

Financing of the Mozambique part need to be augmented as per project 5.5.3.

Actions must urgently be taken to temporarily restore communications between Zimbabwe and Beira before the implementation of the link.

MICROWAVE LINK NAZIMBA - MTWARA  
 MOZAMBIQUE



Identification and Summary

Scope of the project: One of the links constituting the backbone telecommunications system in Mozambique, also linking the networks in Mozambique and Tanzania

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique; Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 8.9 million (1983 prices)  
 total: USD 12.4 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1984

Duration: 3 years for each section, total 8 years

Secured financing: -

## 2. Project Description

The project consists of a microwave route Nampula-Pemba-Mocímboa da Praia-Mtwara planned to serve as a northern leg of the national backbone network and later also as PANAFTTEL link between Tanzania and Mozambique.

The completion of the project is scheduled in three steps:

Nampula-Pemba	1986
Pemba-Mocímboa	1988
Mocímboa-Mtwara	1991

The costs of the three sections are estimated to amount to USD 12.4 million in current prices.

The Tanzanian share of the investment is about USD 0.5 million in current prices.

## 3. Present Project Status

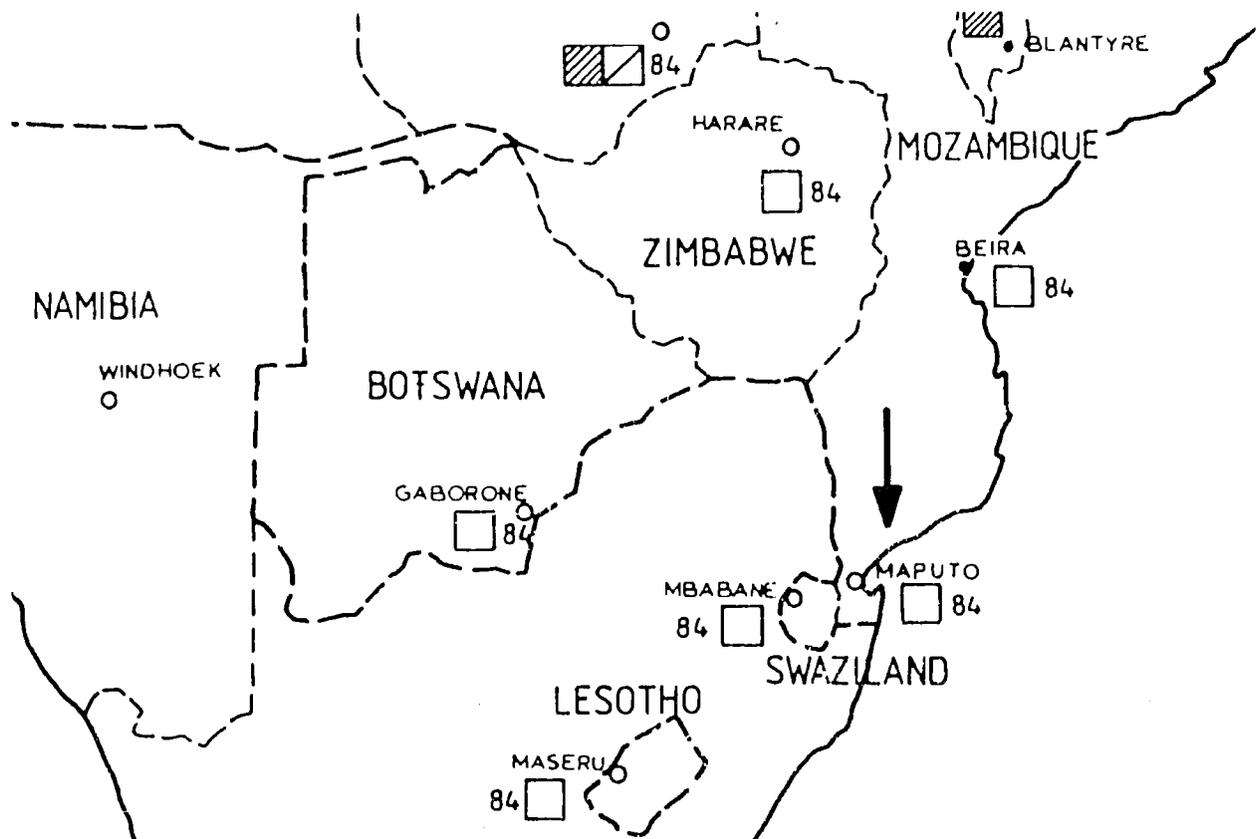
Project definition has been finished as per project 5.5.3 for the Mozambican side. A pre-investment survey for the cross-border link has been prepared by ITU.

## 4. Future Activities

Specifications for the entire route will be needed as well as finance. The time schedule should be checked with Tanzania and advantages of an earlier implementation assessed.

INTERNATIONAL TRAFFIC SWITCHING CENTRE (ITSC) AT MAPUTO  
MOZAMBIQUE

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1. Identification and Summary

Scope of the project: To provide international subscriber dialling facilities to neighbouring countries and beyond from Mozambique

Project category: 2: New Telecommunication Projects

Submitted by: Mozambique, Ministry of Posts, Telecommunications and Civil Aviation

Executing agency: Telecomunicações de Moçambique

Estimated cost, fixed: USD 2.95 million (1983 prices)  
total: USD 3.5 million (current prices)

Foreign currency part: Approx. 90%

Proposed start: 1983

Duration: 2 years for the first implementation

Secured financing: Included in 5.5.3

-- Project Description

Implementation of an international transit switching centre (ITSC) in Maputo with initial capacity of 1000 telephone channels transit routing and charging facilities employing digital technique. The ITSC is related to the implementation of the satellite communication system (project 5.5.1). It will provide ISD on the international routes having sufficient number of circuits.

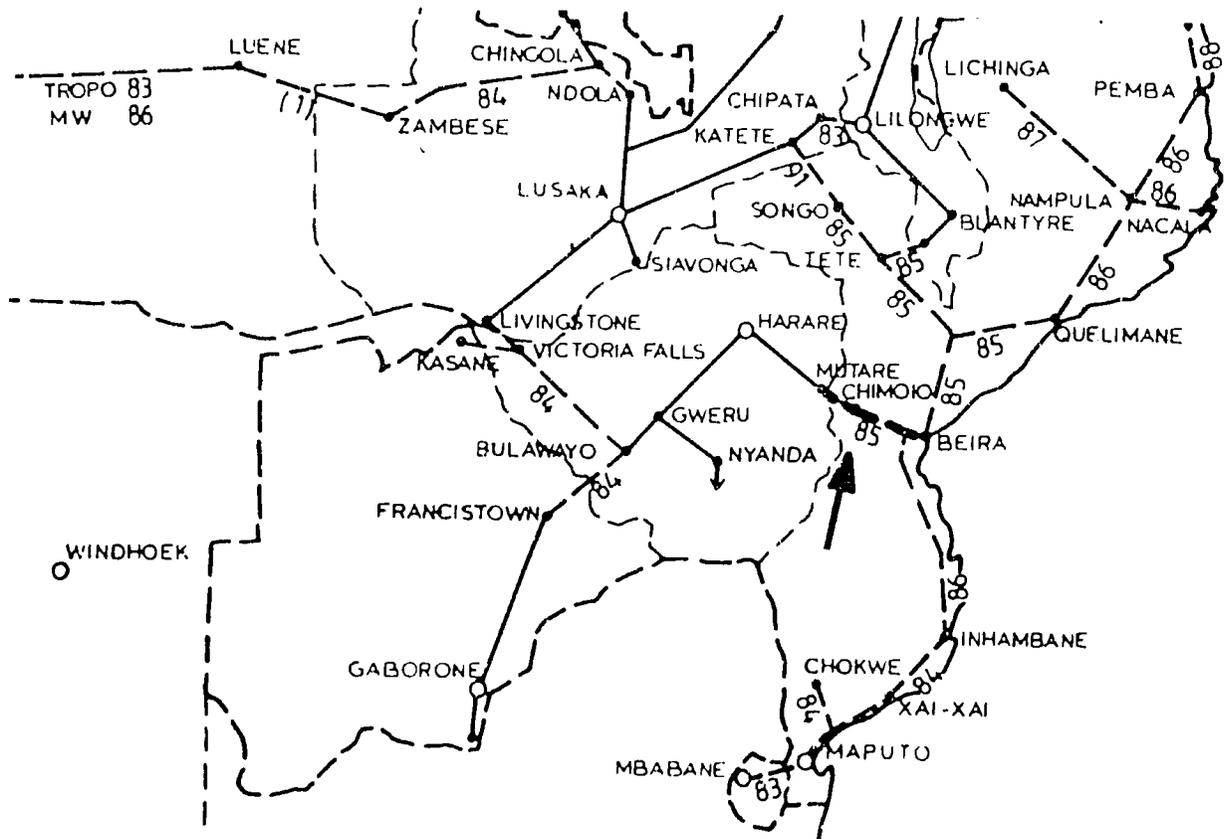
3. Present Project Status

The first implementation is included in the first phase of the project 5.5.3, for which engineering and design are in progress by the Consultants.

4. Future Activities

As per project 5.5.3.

UPGRADING OF THE OPEN WIRE CARRIER SYSTEM BEIRA - MUTARE  
 MOZAMBIQUE



Identification and Summary

- Scope of the project: To increase the number of telephone channels between Mozambique and Zimbabwe from 30 to 60, also providing connections to the PANAFTEL via Harare-Bulawayo-Livingstone (Project no. 5.9.3)
- Project category: 1: Rehabilitation/Upgrading
- Submitted by: Mozambique and Zimbabwe
- Executing agency: Telecomunicações de Moçambique
- Estimated cost, fixed: USD 1.0 million (1983 prices)  
 total: USD 1.0 million (current prices)
- Foreign currency part: Approx. 60%
- Proposed start: Soonest
- Duration: 6 months for existing 27 channels, 18 months for upgrading to 60 channels
- Secured financing: USD 0.6 million

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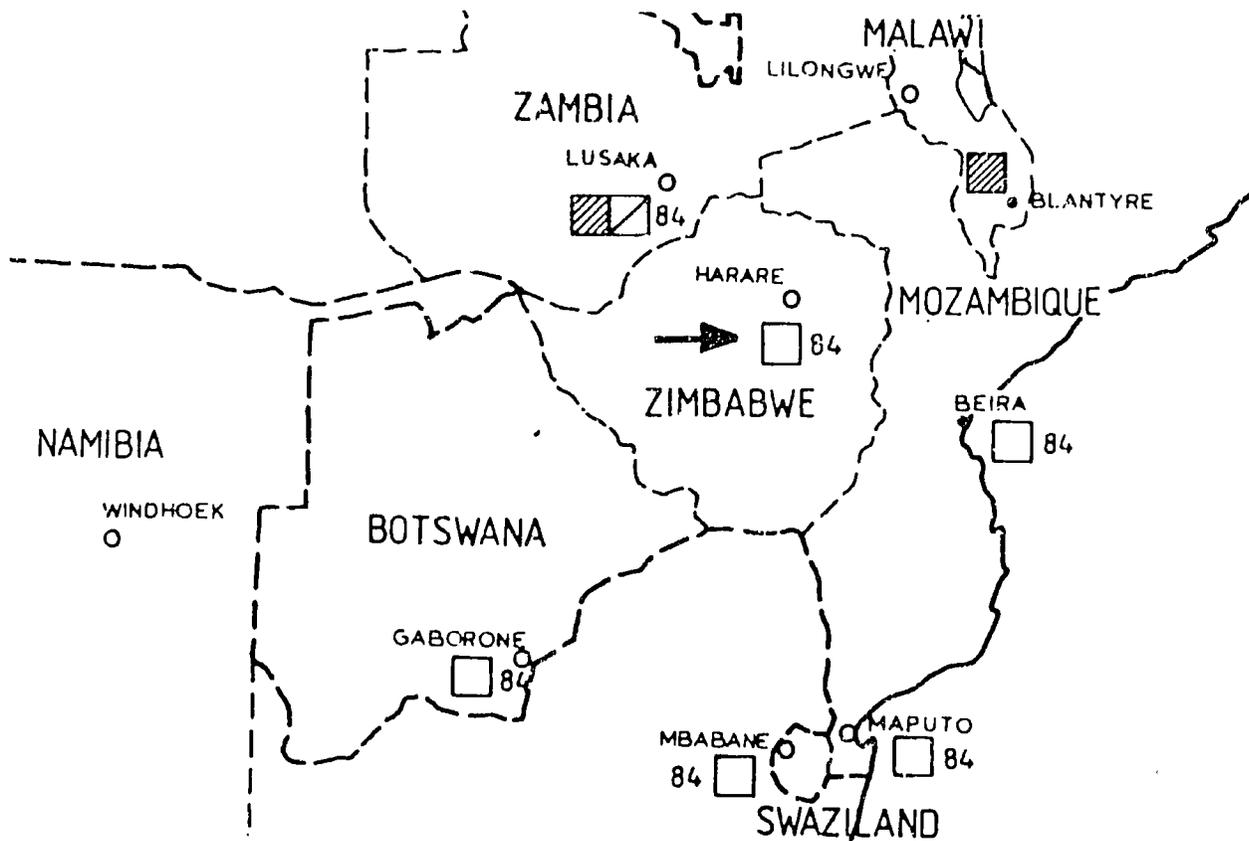
### Project Description

The quickest and cheapest way of increasing the number of circuits between Mozambique and Zimbabwe would be to upgrade the existing carrier system Beira-Mutare from a capacity of 30 channels to 60. This requires an overhaul of the existing O/H line and an extension of the existing carrier capacity.

The O/H line would meet the demand until the microwave links in Mozambique can be installed.

### 3. Present Project Status

Financing is secured from the KFAED. A consultancy offer for a survey of the required rehabilitation activities has been obtained but outlook for an early implementation of this project does not seem encouraging.



1. Identification and Summary

Scope of the project: To provide for automatic transit switching between the national, interterritorial and international networks

Project category: 2: New Telecommunication Projects

Submitted by: Zimbabwe  
Ministry of Information, Posts and Telecommunications

Executing agency: Posts and Telecommunications Corporation

Estimated cost, total: USD 4 million (current prices)

Foreign currency part: 86%

Proposed start: 1982. The project has started in 1982

Duration: 2 years (expected RFS January 1984)

Secured financing: USD 4 million

2. Project Description

The project comprises implementation of a digital international transit switching centre (ITSC) for 6000 junctions, initially equipped for 2300, on a minimum of 30 routes including facilities for automatic billing. Installation, commissioning, training of local staff and initial maintenance supervision are also contained.

The exchange will be located at the microwave network nodal point in Gweru.

The commissioning of the ITSC is expected by January 1984.

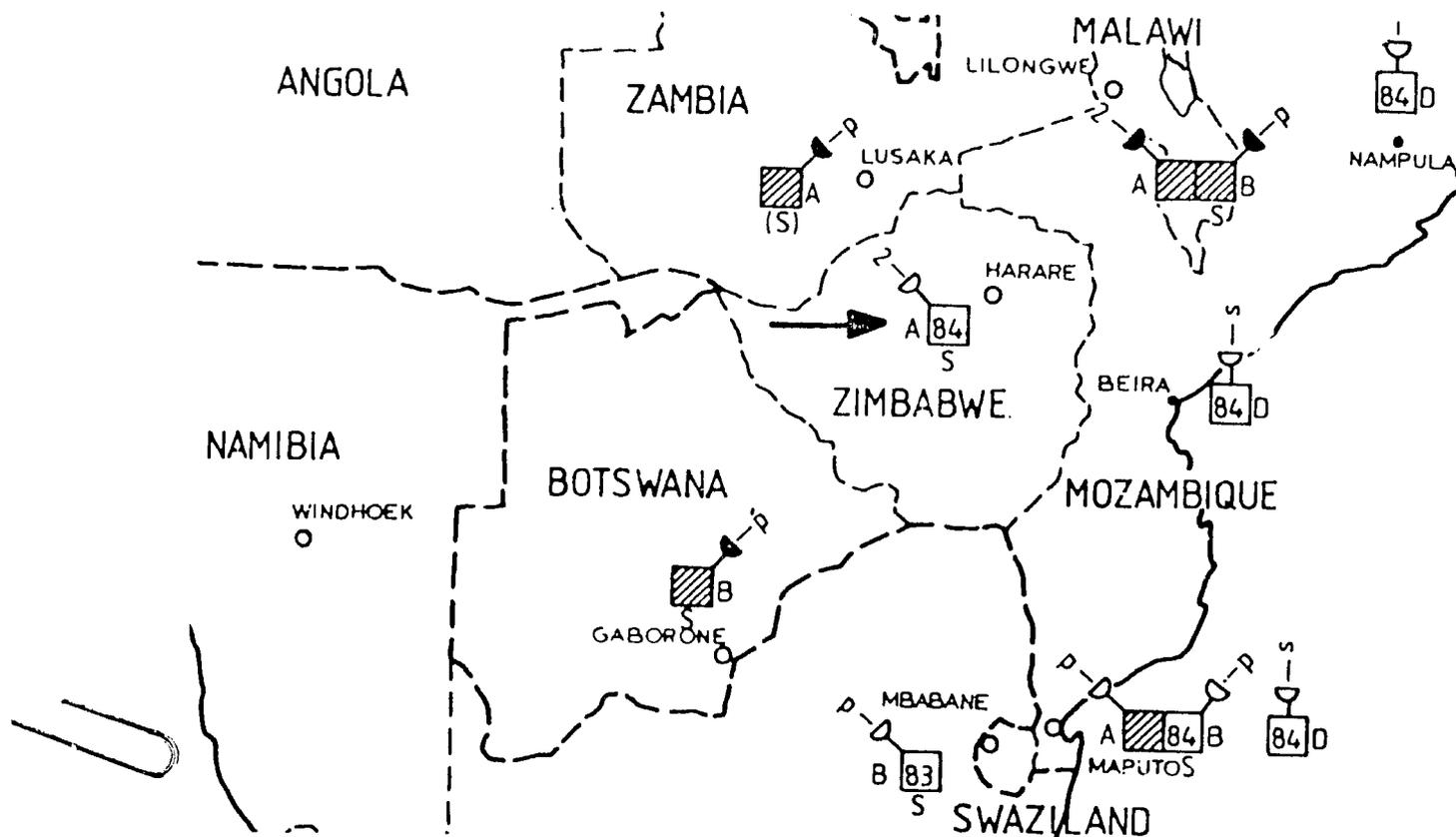
Botswana notes this project with satisfaction as they can use this TSC for primary routing to most countries in the region and possibly for some traffic further via the Atlantic Ocean satellite.

3. Present Project Status

A supply contract has been signed with the contractor. The costs of the project including building costs are being financed by SIDA grant.

4. Future Activities

Completion of execution.



1. Identification and Summary

Scope of the project: To provide for international telecommunications services and the transmission and reception of TV programmes

Project category: 2: New Telecommunication Projects

Submitted by: Zimbabwe  
Ministry of Information, Posts and Telecommunications

Executing agency: Posts and Telecommunications Corporation

Estimated cost, fixed: USD 13.8 million (1983 prices)  
total: USD 14.4 million (current prices)

Foreign currency part: 60%

Proposed start: The project started 1981

Duration: 3 ½ years (estimated RFS 1984)

Secured financing: -

6/8

## 2. Project Description

The project comprises implementation of a satellite earth station standard A, facing the Atlantic Ocean Major Path 2 satellite, with a capacity of 300 channels of which 180 would be initially used, equipped with SCPC facility for small routes and possibly TDMA at a later stage.

The satellite station would lessen the heavy dependence of Zimbabwe on the neighbouring countries for all international traffic. The viability of the project is guaranteed by the existing high level of traffic and the relatively high number of subscribers in Zimbabwe.

## 3. Present Project Status

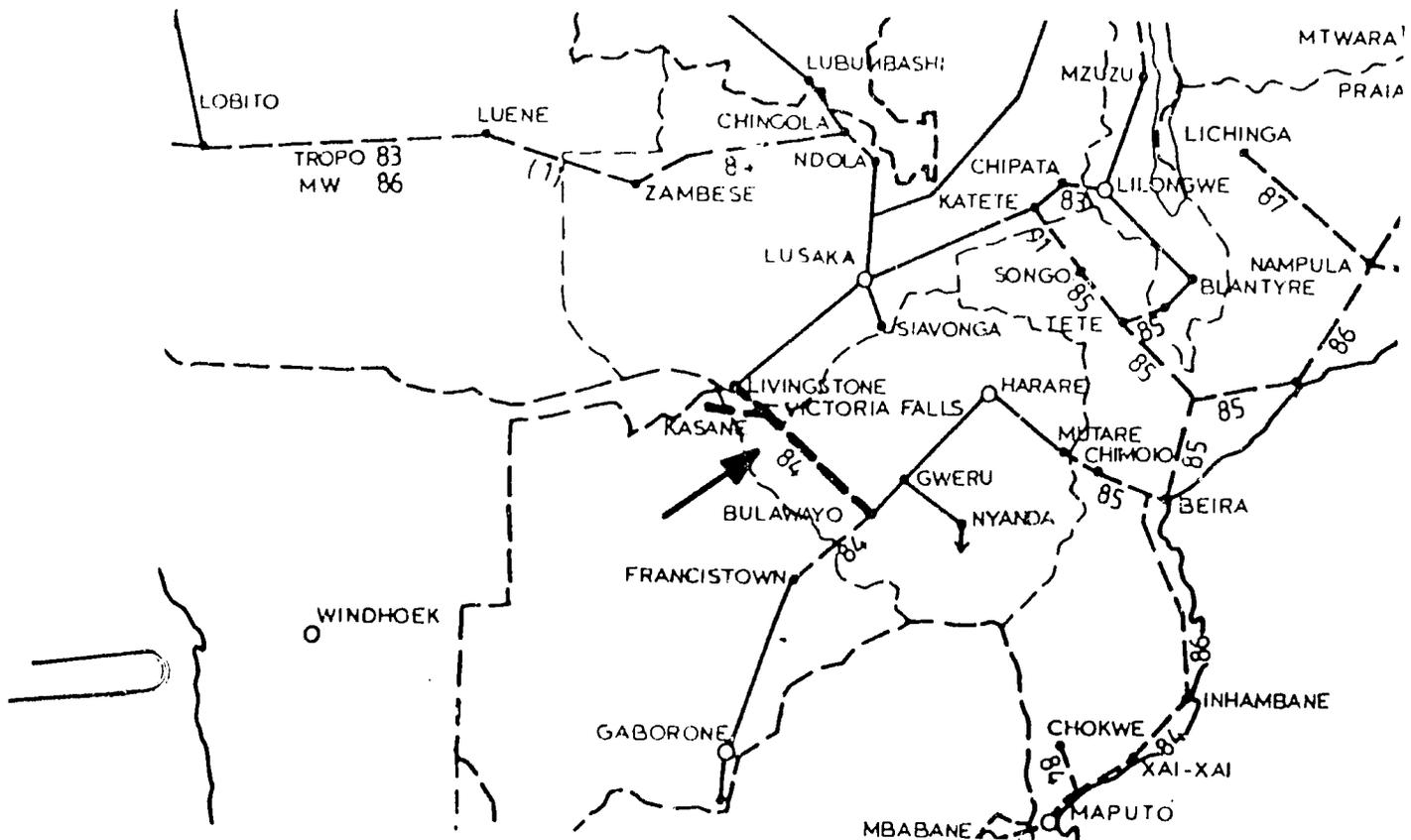
A feasibility study has been completed in 1981. INTELSAT has been appointed as Consultants for preparation of specifications, installation, supervision, and commissioning.

Bilateral traffic agreements are being finalized.

## 4. Future Activities

Site selection and specifications are expected to be ready during 1982.

Financing of the foreign currency part is being sought.



1. Identification and Summary

Scope of the project: Provision of a high capacity radio link between Zambia and Zimbabwe to cater for telecommunication requirements and transmission of television programmes. The link is an important leg in the PANAFTEL terrestrial network

Project category: 2: New Telecommunication Projects

Submitted by: Botswana, Zambia and Zimbabwe

Executing agency: Co-ordinated by Posts and Telecommunications Corporation, Zimbabwe

Estimated cost, fixed: USD 10.0 million (1983 prices)  
total: USD 10.0 million (current prices)

Foreign currency part: 75%

Proposed start: 1981

Duration: 3.5 years (expected RFS June 1984)

Secured financing: USD 10.0 million from Norway and Sweden

## 2. Project Description

This project will connect Zambia and Zimbabwe over a microwave radio link with a capacity of 960 channels installed on the route Bulawayo-Victoria Falls-Livingstone with a connection to Kasane, Botswana, which is expected to need better communications after the completion of the Botswana-Zambia road (project no. 1.2.1).

The project is being implemented together with the project no. 5.2.1 with Zimbabwe acting in a co-ordinating capacity.

## 3. Present Project Status

The contract with the supplier has been signed in February 1982 with an RFS date in June 1984. The contract provides for a turn-key installation except for the civil works which are in progress.

The project is financed by grants from Norway 58%, and Sweden 42%.

## 4. Future Activities

A progress report is awaited from Zimbabwe.