

AFR TZA/S 301/77

**FEASIBILITY STUDY  
AND PRELIMINARY DESIGN OF  
SOUTHERN COAST  
LINK ROAD PROJECT**

**FOLLOW-UP REPORT 1995**

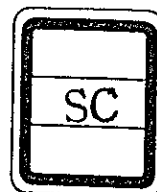
**Project data**

Region:	Africa
Country:	United Republic of Tanzania
Sector / Subsector:	Transportation / Road
Code No:	AFR TZA/S 301/7
Type:	Feasibility Study
Counterpart Agency:	Ministry of Works, Communications and Transport
Fiscal Year Completed:	1977
Consultants:	Japan Overseas Consultants Co., Ltd. Fukuyama Consultants Co., Ltd.
Expenditure:	310,652 (¥,000)
Present Status:	Implementing

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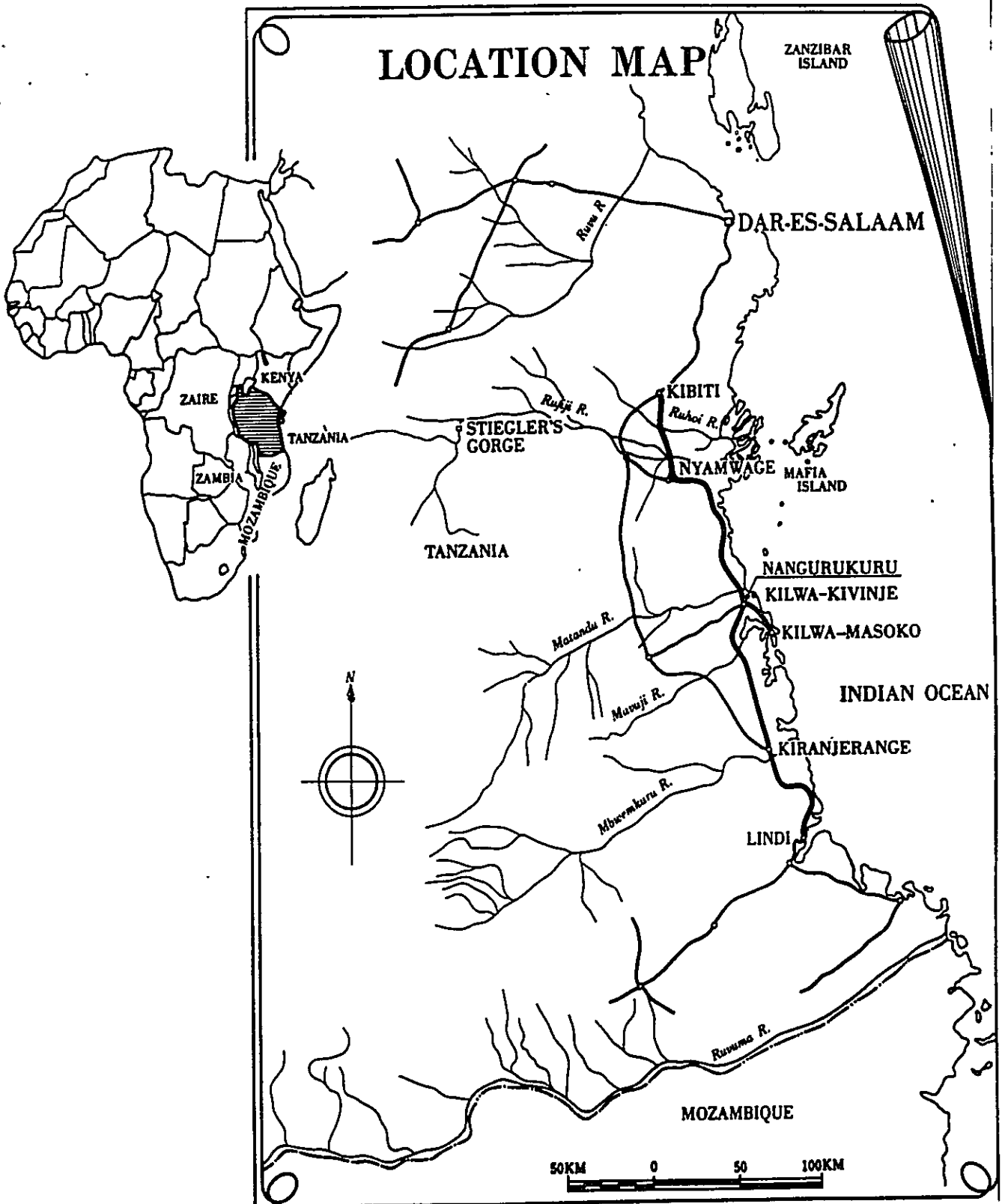
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Project site map / location



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## Project site map / location:

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# 1 Executive Summary

## Summary of survey results

Largely due to the erratic nature of donor funding, the upgrading of the southern coastal link road has been implemented in a piecemeal manner. The 508 km road is currently divided into 69 km of good bitumen, 192.5 km of broken bitumen, and 279 km of earth/gravel road. The broken bitumen road requires total rehabilitation.

The Ministry of Works have tried to raise funds to complete the project in a rational manner, however, the high costs involved meant that it has been difficult to attract donor funding. The existing road is difficult to maintain due to the distance and relative inaccessibility of some stretches of road, particularly in the rainy season which runs from December to May.

The sections of road with a gravel grade surface are in poor condition because of the marginal quality of the locally-available gravels and crushed stone. A high level of erosion is experienced, with the result that the gravel road sections are difficult in the dry season and impassable in the rainy season.

In addition to the scarcity of adequate stone material for constructing the load-bearing layers, one major fault in the project design and implementation was the decision to begin construction at Kilwa Masoko. This involved the high cost of transporting bulk materials by ship to the dock at Kilwa, and working northwards on unpaved roads. From when the project foundered, maintenance works have had to be inserted from the north via unpaved sections of road. In retrospect, the project may have been better implemented by working south from Dar es Salaam on and from a paved road surface which would facilitate deployment of plant as required.

## Conclusions

Because of the piecemeal construction funding and planning, the condition of the road is decaying at a rate greater than would be expected under more rational planning. The problem is now to obtain sufficient funds to finish the road to a standard where maintenance costs are reduced and plant can be deployed to other areas.

## **Recommendations for JICA**

Although construction costs are high, the project deserves re-assessment for funding because significant stages of the road have been completed. JICA could assist the Government of Tanzania to convene a donor consortium to examine the prospects for funding the completion of the road.

## **Dissemination and following action**

In addition to the JICA UK, and JICA Tanzania Offices, it is anticipated that this report will be circulated to the Directorate of Roads and Aerodromes under the Ministry of Works of the Government of the United Republic of Tanzania.

## **2 Results of survey: Project Design**

### **Identification and outline of project rationale**

The road which runs South from Dar es Salaam to Mingoyo was in existence prior to independence in 1961. It has always been a difficult road and impassable during the rainy season which runs from December to May. The scheme to upgrade the road was identified soon after independence by the Government of Tanzania, and a proposal was lodged with the Embassy of Japan in 1973. The aim of the improved road was to enhance transport and communication with the coastal regions south of Dar es Salaam and thereby boost the development of that region.

The predominantly muslim coastal zone is economically and politically significant, yet is not well served by transport infrastructure. The economic internal rate of return (EIRR) for the project has been consistently calculated at 48% a year for the northern section, (Kibiti to Kilwa Masoko) and 15.2% a year for the southern section (Kilwa Masoko to Lindi).

### **Short description of project**

The JICA feasibility study of 1977 proposed to create either a finished gravel road or a two-lane bitumen road from Kibiti (126 km South of Dar es Salaam) to Kilwa Masoko. The total length of road to be upgraded was 327 km, and included bridge works over four bridges at the Rufiji, Matandu, Mavuji and Mbwemkuru rivers. The largest of these rivers, the Rufiji, is currently crossed by ferry.

### **Preliminary design**

The feasibility study and preliminary design was carried out by Japan Overseas Consultants Co., Ltd and Fukuyama Consultants International Co., Ltd between August 1975 and September 1977.

### **Project funding**

The total cost in September 1977 was calculated at over US\$ 24.8 million. The current estimated cost to complete the project is US\$ 158 million. Out of this total, funding of U.S.\$ 35 million has



been provided by the Kuwaiti Fund and OPEC, and financing is now being sought for the remaining US\$ 123 million.

### **Review of project design**

The JICA project design seriously under-estimated the cost of conveying suitable gravel material to site. The JICA study also under-estimated the cost of maintaining the road during a protracted period of construction, especially the deterioration of the marginal construction materials.

### 3 Results of survey: Project Implementation

#### Implementation and monitoring

Implementation of construction has been erratic. This was caused by piecemeal funding and the weather conditions. The decision to begin construction from the south was a mistake. It involved the extra expense of shipping all the externally-produced materials and equipment to Kilwa Masoko. The construction plant in Kilwa Masoko was also unavailable for deployment to other areas during the rainy season because it was cut off from Dar es Salaam and other areas by the surrounding grade roads.

Monitoring of the progress of all roads construction and maintenance is logged on a monthly basis by the Roads and Aerodromes Division of the Ministry of Works. Major funding bodies have also made independent appraisals of the road, and the Government of Tanzania regularly updates feasibility studies in order to refine proposals for funding.

#### Development to date

The present condition of the road can be tabulated as below:

From	To	Km	Surface	Condition	Date	Funding
Dar es Salaam	Kibiti	126.5	Bitumen	Very poor	1968	
Kibiti	Ikwiriri	29	Bitumen	Good	1991	Saudi
Ikwiriri	Ndundu	12	Earth	Working	1995?	KF/OPEC
Ndundu	Somanga	60	Earth	Poor	1992	GoT
Somanga	Njenga	41 32+9	Earth & bitumen	Poor	1992	GoT & Japan
Matandu	Matandu	3.2	Earth	Very poor		
Matandu	Kilwa Masoko	40	Bitumen	Good	1984	GoT & Japan
Nangurukurur	Lindi	171.3	Earth	Poor		
Lindi	Mingoyo	25	Bitumen	Very poor	1963?	

Source: Roads & Aeroplanes Division, MoW, 1995

## **Impacts**

At present the road is not significantly changed from its original condition. Busses travel the road in the dry season, but progress is slow. The poor condition of the road is obviously a severe hinderance to the development of the southern regions. The dry season route from Dar es Salaam to Lindi and Mingoyo via Songea is 1,600 km. This distance is 1,150 km more than the direct route that the south coast link road would provide.

## **Sustainability**

Without external donor funding, the Government of Tanzania has not been able maintain the road at an operational level. A new World Bank supported scheme will increase the national capacity to maintain and improve roads through a programme of improved revenue generation budgeting and disbursement of funds.

If the road were constructed to bitumen standard the cost of maintenance would be reduced and the utility value and return on investment would be increased.

## **4 Results of survey: Conclusions**

### **General comments on development**

The road is a good example of an expensive but viable project that has suffered through failure to attract donor funding in a cohesive and planned manner. The unsteady trickle of funding led to irrational construction of a largely ineffective road which is a burden on the plant resources of the Ministry.

A rational and planned process approach could be adopted which would allow the Department of Roads and Aerodromes to prioritise road maintenance and construction projects, determine the construction sequence, and use donor funding in a manner which would optimise road maintenance and construction throughout Tanzania.

### **Specific comments on JICA's role**

The JICA preliminary design is the basis for work on the Northern section of the of the road. The project is still viable, and the planned route has not significantly changed.

A 1993 survey recommended that JICA consider further funding applications, if and when requested.

Original equipment supplied in 1984 by JICA for the initial construction of the Kilwa to Matandu section is now almost unserviceable. Materials supplied by JICA, such as piping and steel, are also almost exhausted.

### **Requests for further surveys**

No further requests for surveys, feasibility studies or detailed designs has been made.

## Annex A: Interview

### Interviewees

Note: Interviewees who contributed to the questionnaire are indicated with an asterisk (\*).

Mr Urio, Director of Roads and Aerodromes \*  
Ministry of Works, Transport and Communication

### Interview notes from: Mr Urio of MoW

Note: Questions given in Italics

#### *Your main comments on the project?*

After the design study, the strategy for funding and implementation became the biggest issue. Overseas funding has been hard to secure, but the directorate has used a Ministry Force Account Unit (GoT funding) to perform the maintenance of existing sections and the construction of new sections of road.

#### *How much is paved?*

A total of 229km have been paved at some time. Of that total 40km were paved with Japanese aid, this section runs North from Kilwa Masoko to Matandu. The construction was financed by the GoT and they used equipment provided under loans and grants by the Government of Japan.

The 29km from Kibiti to Ikwiriri is also recently paved and in good condition, all other sections of paved road are in very poor condition.

#### *What remains of the Japanese equipment provided under grant aid?*

The equipment which was supplied in 1980 / 1981 is now ending its useful life and we are taking these machines off the Government books and selling off to private contractors. There is a little upgrading work being done by local contractors, and they may use the last viable life in the equipment.

#### *What about the implementation of the project?*

In retrospect, we started working in the wrong place, we worked North from Kilwa, taking materials to Kilwa by boat. As such, we constantly working over poor roads and with very poor materials for constructing a load-bearing layer - there is very little good gravel or crushed stone available - so our work was restricted to

dry season work with constant maintenance of the road we were working on.

We would have been better off if we had started from Dar es Sallam and worked steadily South working from good tar roads. This would have provided the capacity to use equipment from the road site on other sites in the wet season.

*Is the original project design study still relevant?*

The JICA estimates of cost were low. But the plans are good.

*What is the current status with funding?*

We required additional assistance from Saudi Arabia and Kuwait to continue construction. The crossing over the Rufiji will cost \$35 million to complete using our new loan from the Kuwaiti Fund and OPEC.

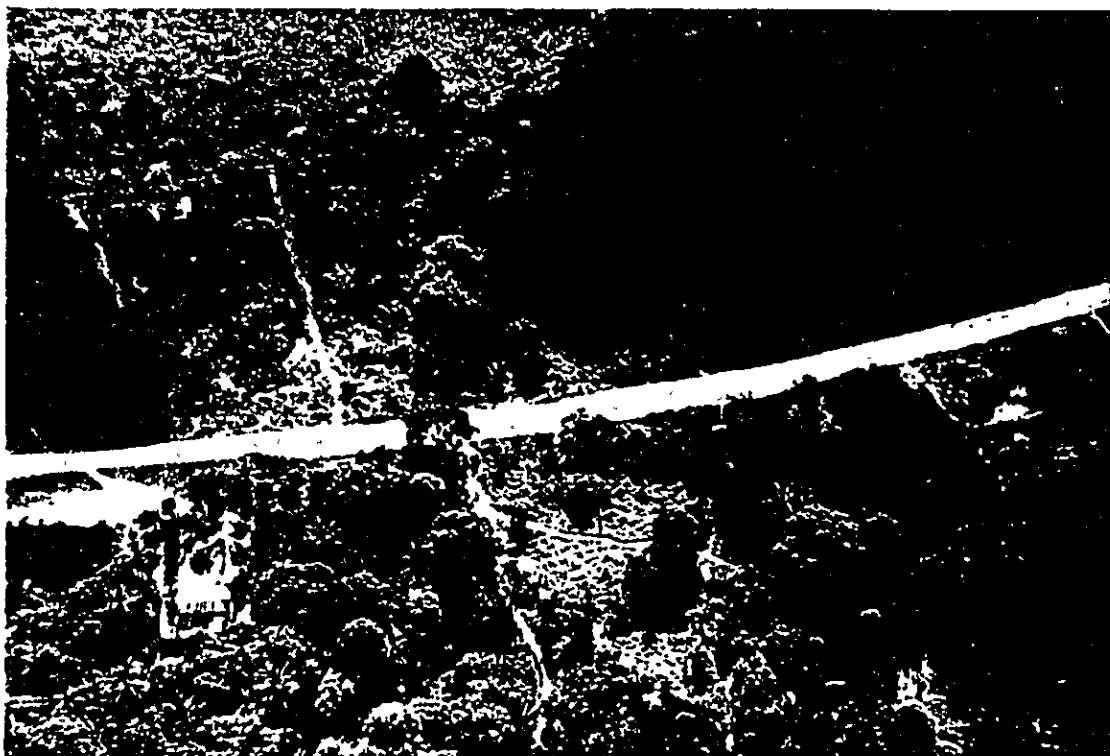
Works under the new loan are due to start very soon (December) and perhaps next year we will start on the Rufiji bridge.

*Will that work be simple or will it be difficult to stay within projected costs?*

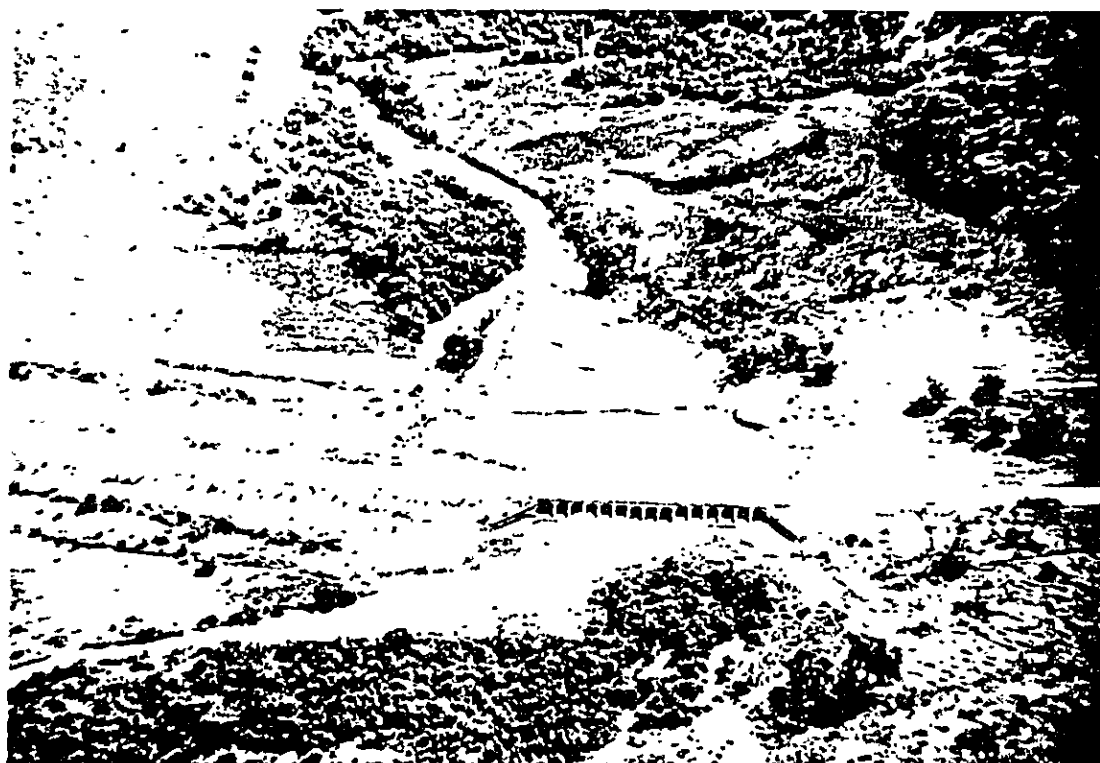
It depends partly on the rainfall, unpaved pieces are very tough in the dry season, and often impassable in the wet season.

Before we start construction we have to repair the gravel road. From 1989 to now, most of the road has sat unpaved with very marginal materials, the erosion has been bad, and it requires constant maintenance.

## Annex B: Photographs of project



1: Broken tar road south of Dar es Salaam near Kibiti



2: Tar road section from Kibiti to Ikwiriri







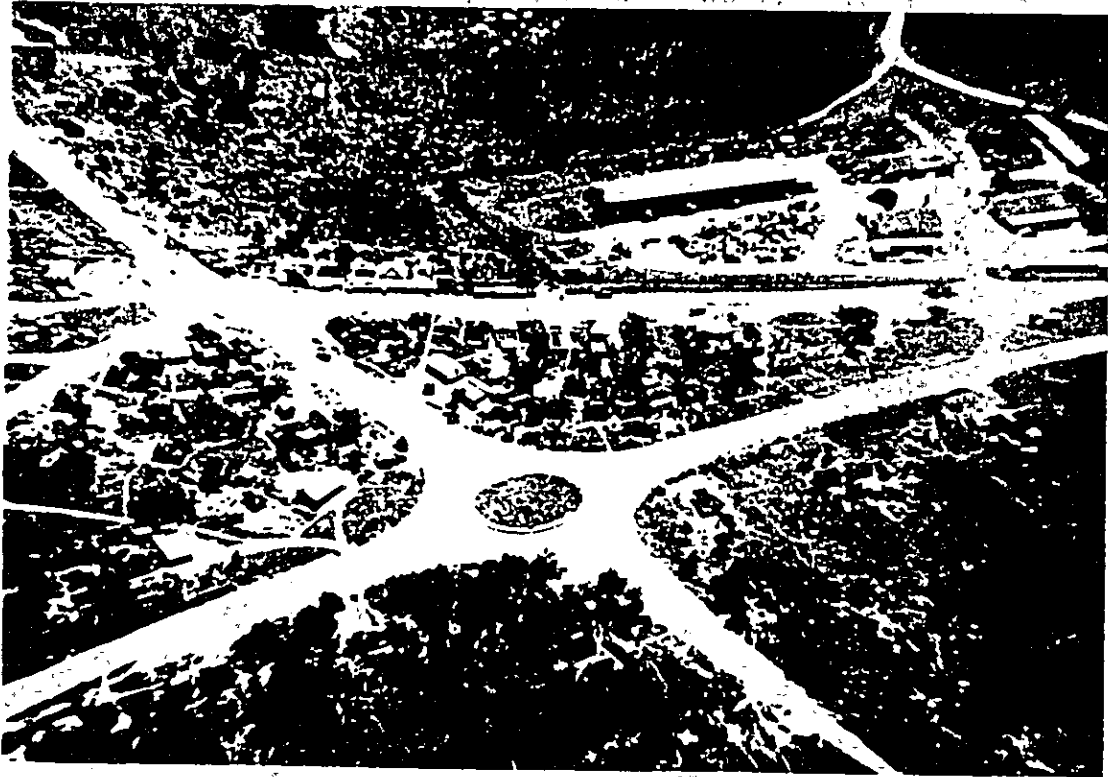
3: Tar road section from Kibiti to Ikwiriri



4: Grade road section just north of Rufiji



5: Ferry over the Rufiji



6: Tar road section at Nangurukurú built by JICA in 1984

## **Annex C: Terms of reference & purpose of survey**

### **Terms of Reference**

- The JICA UK Office has requested the consultants to prepare of an independent follow-up survey in Tanzania.
- It is proposed that the work be carried out between Thursday 9th November and Friday 22nd December, 1995.
- The survey will comprise a broad evaluation and current appraisal of thirteen (13) Master Plans, Feasibility Studies, and Basic Studies in comparison to the present and future status of the individual projects or studies.
- The scope of work will cover:
  - a) Study on Water Resources Development in the Ruvu River Basin
  - b) Study on Dar es Salaam Road Development Plan
  - c) Natural Soda Development in Lake Natron and Related Transportation Facilities
  - d) Kilimanjaro Region Integrated Development Plan
  - e) Southern Coast Link Road Project
  - f) Proposed Mahale Mountains National Park
  - g) Lower Moshi Agricultural Development Project
  - h) Mkomazi Valley Area Irrigation Development Project
  - i) Expanded Afforestation Work in the Same District of Kilimanjaro Region
  - j) Road Improvement and Maintenance in Dar es Salaam
  - k) Lower Hai and Lower Rombo Agricultural Development Project
  - l) Rehabilitation of Dar es Salaam Water Supply
  - m) Topographic Mapping of Mwanza-Geila Block in the United Republic of Tanzania
- If possible, the survey will cover recent and relevant developments in the context of each project or study.
- Where appropriate, the reports will comprise questionnaires, interviews and highlight following actions for JICA and/or the Government of Tanzania.
- The reports will contain a detailed itinerary, records of interviews made and sources of information.

- The quantity and quality of information contained in the reports will reflect the availability and accessibility of information in Tanzania.
- The reports will be prepared in draft form and presented to the relevant implementing Ministries for comments before leaving Tanzania.
- Final report texts and layouts will be completed by Friday 22nd December, 1995.

### **Purpose of survey**

This report comprises a descriptive assessment of the progress of the project against the objectives of the project as described in the original study. The purpose of the survey is to:

1. Describe project achievements to date by their:
  - A. Impacts
  - B. Effectiveness
  - C. Relevance
  - D. Efficiency
  - E. Sustainability
2. If required, produce specific and general recommendations to improve the performance of this and other similar projects
3. Further communication between funding agencies, design consultancies, implementing agencies and project beneficiaries

## **Annex D: Methodology & Chronological Itinerary**

### **Methodology**

As far as possible, the survey was performed by a structured process:

- Identify the authorities involved
- Identify and locate key informants within the authorities
- Locate adequate documentation and reportage
- Define aims of project
- Conduct interviews on specific and general issues
- Define indicators of achievement and/or progress
- Visit the site
- Analyse the collected data
- Prepare draft report
- Discuss the draft report with key informants
- Edit and prepare final report text

### **Chronological Itinerary**

#### Sunday, November 12th

Arrive Dar es Salaam

#### Monday, November 13th

Introductions to JICA Office & Embassy of Japan

#### Tuesday, November 14th

Meetings with Ministry Officials

Collation of reports and data

#### Wednesday, November 15th

Meeting with Ministry of Works, Transport and Communication

Meetings with Ministry Officials

**Annex E: References & reports used in survey**

JICA (1977) Final Report on Feasibility Study and Preliminary Design of Southern Coastal Link Road Project, Vol III, Soil and Material Investigation and Annexes, September 1977

*NB: Vols I & II unavailable at time of writing.*

JICA (1977) Interim Report on Feasibility Study and Preliminary Design of Southern Coastal Link Road Project, Mimeo., August 1976

Ministry of Works, Communications and Transport (1995) Implementation Strategy for Dar es Salaam - Kibiti - Lindi - Mingoyo Road Project, Mimeo., April 1995

Government of Tanzania, Ministry of Works, Communications and Transport (1995) Integrated Roads Project (IRP) Monthly Progress Report No 52, Mimeo, September 1995

